

# **IPRO 331: Global Warming and Community Outreach**

## **Fall 2010 Final Report**

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## Executive Summary

In the beginning of the 20th century the discovery of Global Warming, mostly due to the research and findings of German Scientist Guy Stewart Callendar. Scientist Stewart was also the first scientist to research how burning fuels create carbon dioxide, which contributes to the greenhouse effect. Later during the 20th century The U.S. weather Bureau's Division of Climate and Crop Weather announced that in fact the earth's temperature was increasing. In 2007 the IPCC announced that the global temperature would increase by 4 C in 2099, this would result in higher sea levels by approximately .6 meters. If the sea level would increase by that much some of the earth's agricultural areas might disappear. Despite of all the proof even in the 21st century the skeptics have claim that Global warming is nothing but a myth and other individuals are unaware of what they can do to help decrease the impacts of Global warming. According to the Rasmussen Reports, 47% of American voters believe human activity is not contributing to global warming. This contradicts research which has strongly suggested human activity, especially the burning of fossil fuels and emission of carbon dioxide which has drastically increased since the industrial revolution, can be directly correlated with increase in the Earth's average temperatures. IPRO 331 aims to increase awareness of the causes and effects of global warming, as well as practical approaches to preventing global warming.

Several presentations were conducted at elementary schools and high schools throughout the Chicago land area. Topics such as Greenland, potable water, satellites, alternative energies and waste management were incorporated into the presentation to give a more detailed understanding in the effects of global warming. In addition to the PowerPoint presentations, an extra effort was made to increase communication and interaction with the audience. Thus, brochures, a Wiki Space, worksheets, and games were created.

All the members of IPRO 331 successfully worked together to reach out to 1,456 students while receiving positive responses from an overwhelming majority of the audiences. While this semester was the last to offer IPRO 331, it will be converted to a Camras Scholars Special Project to continue spreading awareness of global warming.

## **Purpose and Objectives**

The main purpose of IPRO 331 is to educate the public concerning the causes and effects of global warming. Practical solutions to preventing global warming were also heavily focused upon. Additionally, members of team will work together with Camras Scholars to develop IPRO 331 into a Camras Scholars Special Project.

The main goal for the semester was to reach out to as many people as possible, presenting objective facts about every aspect of global warming. To accomplish this, we first had to learn about this issue. Splitting up into groups, we researched the topics of alternative energy, views of the skeptics, potable water, Greenland, waste management, green architecture, satellites and climate engineering. Our first objective was to revise last semester's presentation to include new sections and more recent information. This was critical since new data about global warming is always being produced. We wanted to develop a more involved presentation that would appeal to a wide range of age groups. The second objective was to present the information in an unbiased way, stressing the importance of conservation and alternative energies. The third objective was to reach out to more than 1,000 people this semester. Another one of our objectives was to keep a detailed record of our progress throughout the semester. We wanted to create surveys to give out after each presentation to keep track of the number of people we presented to, and to help us improve our presentation. Our fifth objective was to create a Wiki page in which students would be able to reach our information and to contact any members of the group. This, along with the sixth objective to revise the IPRO brochure, allowed us to keep in touch with interested teachers and students. Our final objective was for each team member to develop better public speaking skills. Public speaking is an important skill to develop because it is utilized in many different professions.

## **Organization and Approach**

Throughout the semester when tasks needed to be completed the two team leaders would decide what the best course of action was. Some tasks would require small groups while other tasks could be accomplished individually. For example, the task which required breaking up into smaller groups was the PowerPoint presentation. The presentation was made up of six groups with two members in each group. Each of the six groups had to work together to research their topic and update the slides from the previous semester. The research process involved finding up-to-date information

while making sure it was coming from a credible source. One of the research methods which were used with the help of our group's advisor Dr. Lykos, were *National Geographic* and *Imaging* magazines . Other research methods, which were used in obtaining information, were the internet and books. We felt that the internet was a good source because it is continually updated providing the most up-to-date information. Books were given to us by Dr. Lykos and Carol DeBiak and we used those because they have been a part of this IPRO before and we know that they would steer us in the right direction. The second group task of our IPRO was the creation of our Wiki page, started by one member, Alex Litas, each of the members updated their research topic on the Wiki page. The tasks that were accomplished by one individual such as the brochure and poster. Although the brochure and poster were not a group task, the remaining members did give feedback and ideas of how to improve them.

#### **A. Scheduling Presentations and Brochure**

The contact leader of the group was in charge of assigning schools and organizations for the team members to contact. Contacts were given out in the beginning of the semester once the PowerPoint Presentation was completed. Each team member tried to get into contact with these locations through email or by telephone. This proved to be a difficult task because contacts were not always responsive and also had no availability for a presentation.

Once the brochure and presentation were completed they were used as tools to help us describe to our contacts what IPRO 331 was all about. The brochure had a brief summary of each of the six subgroups and a way of getting in touch with us to set up possible presentations. On the other hand, the presentation was sent to the teachers via email in case teachers wanted to make sure that the presentation was age appropriate and to get a better idea what we were trying to get across to our audience.

## B. Presentations Given (as of 12/5/2010)

Location	Presenters	Total Attendees
Jaimieson Elementary School	Talha, Taimoor	97
Munster High School	Talha, Taimoor	82
Glenbrook North High School	Talha, Taimoor	107
Maine East High School	Talha, Taimoor, Bushra	87
Glenbrook South High School	Talha, Taimoor	88
IMSA	Taimoor	21
Fairview Elementary School	Talha, Taimoor	102
De la Salle Boys	Talha and Matt	93
De la Salle Girls	Sophia, Alex, Antonio, Nicole, and Pete	198
Von Stueben High School	Antonio, Nicole, Alex, Sophia, Pete, Jaeha	83
Peterson Elementary School	Matt, Antonio, Alex, Bushra, Nicole, Pete, Jaeha	231
Mather High school	Talha, Taimoor	183
Niles West High School	Talha, Taimoor, Bushra	79
Westinghouse	Nicole, Alex	5
<b>Total</b>		<b>1456</b>

*Table 1: List of presentation locations and team members who presented*

The table shown above gives a brief look of where we presented and what teams members took part in that particular presentation. The team member who initially contacted the location would work with the rest of the team to figure out who would be available on a given presentation. The number of people reached throughout the semester was 1,456. Overall the audience reception was positive and most locations were interested in having us come back at some later point in time to give more presentations. Also this semester we handed out post-presentation surveys to track our improvement and the feedback of the audience. Although there were some audience members that did not take the surveys seriously, we felt that it the best way to gather feedback

## **Analysis and Findings**

### **A. Research Findings**

I PRO 331 team has been able to reach out to the Chicago land community. By presenting at various schools and organizations, the team was able to spread awareness about Global Warming. The sub-topics included the consequences of Global Warming, fossil fuels, alternative energy, climate engineering, waste management, satellites, green architecture, Greenland and skeptics. We were able to accomplish our goal of spreading awareness of global warming. During the presentations, the team also offered ideas of simple tasks people can do to save energy. At the end of each presentation, the presenters gave out a survey to get feedback from the audience about the presentation and to work on improvements.

### **B. Major Accomplishments**

The team improved the presentation from previous semesters by focusing more on presenting scientific facts and proof. We continue on the last semester's section about the people who are skeptical about global warming. A new brochure was made that better presented our goals for this semester. We also created a Wiki page that includes all of our research and information. We also created an e-mail and a Google group for the I PRO to make communications easy. Overall the most important accomplishments was to create a presentation that was more interacting as well as to include a jeopardy game after each presentation to test our audiences' new knowledge about Global Warming. By the end of the semester, we anticipate presenting to a total of about 1,500 thousand students.

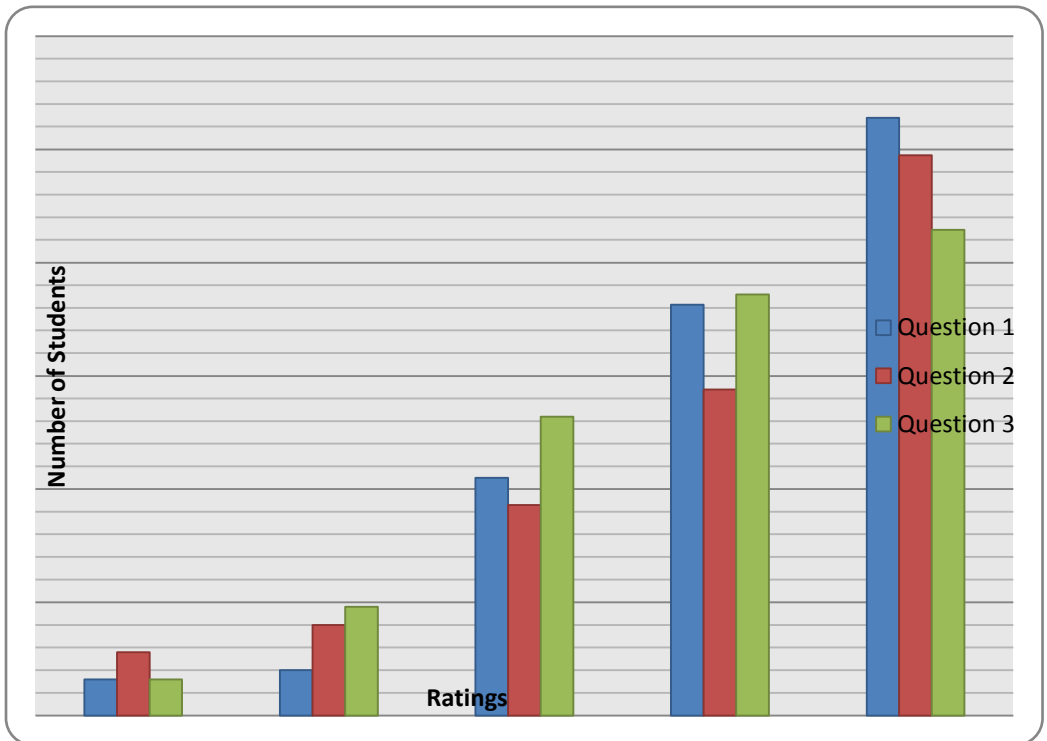
### **C. Graphs**

The following graph was prepared based on analysis of survey results. This graph shows that our scores on questions 1 and 3 demonstrate that our audiences accepted and enjoyed our presentation. More than 1/3 of the overall audience thought that the presentation was most informative, interesting, and that increased their knowledge about Global Warming. Finally, the overall frequency of responses on the survey shows that we did do a good job of presenting. Majority of the score are a 3 or higher.

Feedback Survey:

1. How informative did you find the presentation?  
(Least) 1    2    3    4    5 (Most)
2. How interesting was the presentation style?  
(Boring) 1    2    3    4    5 (Very interesting)
3. How much did the presentation increase your awareness of global warming?  
(Least) 1    2    3    4    5 (Most)
4. Power Point images were (circle all that apply):  

<u>Too many</u>	Too few	Too much info	Too little info	Too much text	Too little text	<u>About right</u>
-----------------	---------	---------------	-----------------	---------------	-----------------	--------------------
5. What was your favorite part of the presentation?
6. What else would you have liked to see presented?





## **Conclusions and Recommendations**

The main goal of IPRO 331 this semester was to educate the community on the causes, impacts, and solutions to global warming. We did this via interactive PowerPoint presentations at local grade schools and high schools and a Wiki online resource. Our IPRO attended 13 schools, gave 20 presentations, and reached a audience number over 1400 people. We added Greenland, space-based solar power satellites, and potable water to the topics outlined by previous IPRO 331s and also enhanced the presentations by including a jeopardy game as well as crossword puzzle and carbon footprint worksheets. Our team created two PowerPoint's, one catered to high school students and another to students currently in grade school.

We would like to thank our Faculty advisor, Professor Peter Lykos, for his devotion to the mission of this IPRO: to spread knowledge about global warming to individuals throughout the community. We would also like to thank Carol DeBiak for her support and helpful advice. In Spring 2011, IPRO 331 will no longer exist. However, throughout this semester, a small group of three Camras scholars along with faculty adviser Dr. Lykos have been working to transform this IPRO into a full-blown Camras special project. The start-up activities for the Camras scholars who will be involved in the project either for academic credit or community service hours will include: continuing the mission of spreading awareness on the topic of global warming throughout the community through PowerPoint presentations and an online resource, adapting the PowerPoint scripts into voice-overs in order to create stand-alone presentations that can be viewed by audiences around the country, and further researching space solar satellite electric power and building upon the satellite presentations created by the current group of Camras scholars.

Another accomplishment for this semester's IPRO team was instituting a hand-down project for the students at certain grade schools and high schools. The idea is that the students in attendance at the IPRO 331 global warming presentations will pass along awareness on the topic by creating their own PowerPoints and handouts to present to younger students. Our IPRO materials were passed along and are also available on our Wiki for the reference of these students. This semester, our team also made a contact with John Kazibut who has advised us on IIT's opportunity to display our presentations as video conferences. This will greatly expand the outreach capacity for the Camras scholars in the upcoming months. The final legacy of IPRO 331 is in the hands of two groups; both the local high school student and the Camras scholars will continue the mission of IPRO 331 in the future.

## Appendix

### A. Team budget

Item	Description	Cost (\$US)
Transportation	Gas, Parking, Tolls	250
Printing	Brochures, Surveys, Questionnaire	200
Miscellaneous	Food, snacks, Prizes...etc	200
<b>Total</b>		<b>650</b>

### B. Team Members and Organization

Taimoor Khan

Talha Qureshi

Panagiotis (Pete) Bakos

Edlira (Sophia) Hoxha

Bushra Hussaini

Matt Pinto

Antonio Gutierrez

Nicole Valio

Alex Litas

Jaeha Jun

## Team Organization

- Co-Leader: Talha
- Visual Design: Matt, Antonio
- Powerpoint coordinator: Bushra



- Co-leader: Taimoor
- Wiki Webmaster: Alex
- Camras connection: Nicole
- Internet broadcasting: Pete
- IPRO office contact: Taimoor
- Treasurer: Taimoor

- Potable Water: Taimoor, Talha
- Greenland: Pete, Bushra
- Satellites: Nicole
- Green Architecture: Matt, Antonio
- Climate Engineering: Alex
- Waste Management: Sophia, Jaeha

### C. Presentation Locations

1. Jaimieson Elementary School
2. Munster High School
3. Glenbrook North High School
4. Maine East High School
5. Glenbrook South High School
6. Fairview Elementary School
7. DeLasalle- Boys
8. DeLasalle - Girls
9. Von Stueben High School
10. Peterson Elementary School
11. Mather High School
12. Niles West High School
13. Westinghouse

#### D. Brochure

### I PRO - 331

#### Who Are We?

Our IPRO team consists of undergraduate students from the Illinois Institute of Technology. The Interprofessional Project Program is a medium through which students come together to solve a problem in the community. We all come from different backgrounds and majors to undertake this very important issue concerning our environment.

#### What Is Our Focus?

The Goal of this project is to inform the community of the problems associated with global warming. Subsequently we aim to educate people in the practical steps some have taken to improve the quality of our environment.



Illinois Institute of Technology  
3300 South Federal Street  
Chicago, IL 60616

### Global Warming and Community Outreach

Informing the general public of the issues  
concerning global warming



Illinois Institute of Technology  
I PRO - 331 Fall 2010

## Greenland

Greenland is feeling the effects of global warming as its massive ice sheets are melting at increasingly high rates. Climate change in Greenland has led to rising sea levels and unstable weather patterns.



Greenland may be considered as a metric measure for the rest of the world if we don't become more environmentally conscious in the near future.

## Sustainable Architecture

Solar Panels can help save the environment by converting the sun's energy to usable power. Not only does this save energy, but also can make the owner money over time.

### 5 Eco-Principles of Design

- 1) Smart Design
- 2) Material Choice
- 3) Energy Efficiency
- 4) Water Conservation
- 5) Healthy Environment



The Smart House  
Museum of Science and Industry, Chicago



## Satellites

Today, new technologies such as satellites are providing the information necessary to develop natural solutions to the climate change crisis. Geographical Information Systems (GIS) collect data regarding wind, solar, and residential patterns to determine which areas of the country are effective positions to place renewable energy structures. In addition, there is research developing space based solar power (SBSP) satellites hoping that in the near future, we can harvest unfiltered energy from the sun both day and night.



## Waste Management

Waste management refers to the process of collecting, transporting, processing, recycling or disposal of waste materials. This is done in only three ways: burning it, burying it, or recycling it.



Proper waste management can save energy and prevent global warming, while unsuitable management can cause severe public health problems and intensify the greenhouse effect.

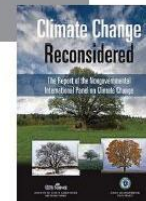
## Potable Water

Potable or drinking water is vital to our current life style. As population increases, the supply of potable water decreases. Pollution and global warming are further limiting our access to freshwater reservoirs as glaciers are melting. In order to combat this decrease, we must find ways to develop water purification methods. Some new methods include: flash distillation, reverse osmosis, geothermal desalination and nano-filtration. By bringing a practical approach in our daily lives to water conservation, we can further progress with a cleaner water supply for everyone.



## Skeptics

Many skeptics claim that global warming is not caused by humans, but naturally by the environment. They say that climate models are incorrect and we do not have reliable projections nor correct data.



Another area of skepticism deals with the effects of carbon dioxide in the atmosphere. As the primary resource of food for plants, carbon dioxide, if properly handled, may be considered as more beneficial than harmful.

## E. WikiSpace

Address: <http://ipro331.wikispaces.com/>

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# ipro331

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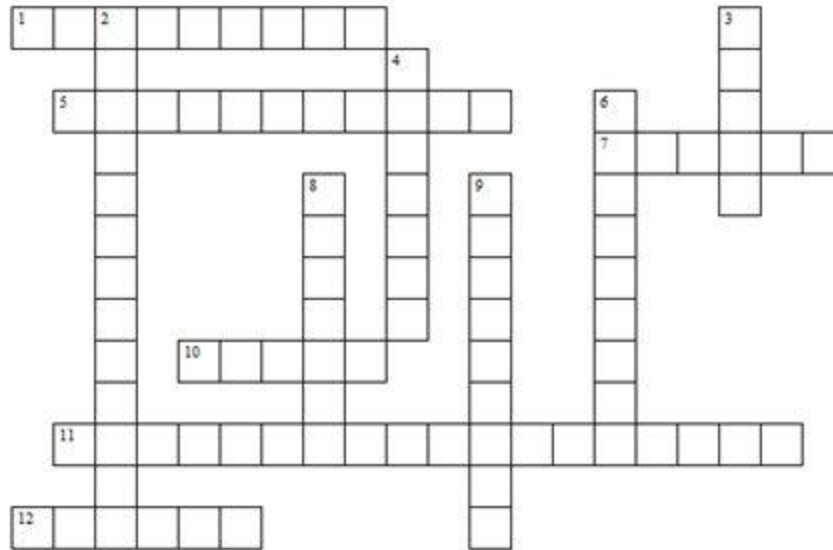
**Presentation topics:**

- [General Information](#)
- [Skeptics](#)
- [Greenland](#)
- [Potable Water](#)
- [Waste Management](#)
- [Fossil Fuels](#)
- [Alternative Energy](#)
- [Satellites](#)
- [Climate Engineering](#)
- [Green Architecture](#)
- [Conclusion](#)



## F. Crossword Puzzle

# Global Warming Crossword



## ACROSS

- 1 The fastest warming place on Earth
- 5 Our primary source of energy today
- 7 A measure of an object's reflectivity
- 10 This type of energy involves heat and light given off by the Sun
- 11 Deliberate manipulation of the Earth's climate to counteract the effects of global warming
- 12 The world's first zero-carbon city

## DOWN

- 2 These five points are used by architects in designing a green building
- 3 70% of our planet is covered in this substance
- 4 Atmospheric conditions over a short period of time
- 6 An object launched in space for the collection of solar power
- 8 How the atmosphere behaves over long periods of time
- 9 The processing of waste into new products to reduce pollution and lower greenhouse gas emissions

## G. Carbon Footprint

# Carbon Footprint



## Overview:

Students calculate their carbon footprint and then determine how they can reduce it. (NOTE: This lesson may require more than one class period.)

Grades 9-12

## Objectives:

The student will:

- calculate their relative carbon footprint;
- read about the connection between carbon output and global warming; and
- research ways to mitigate climate change impacts.

## GLEs Addressed:

Science

- [9] SA.1.1 The student demonstrates an understanding of the processes of science by asking questions, predicting, observing, describing, measuring, classifying, making generalizations, inferring, and communicating.
- [10-11] SA.1.1 The student demonstrates an understanding of the processes of science by asking questions, predicting, observing, describing, measuring, classifying, making generalizations, analyzing data, developing models, inferring, and communicating.
- [10-11] SC.3.1 The student demonstrates an understanding that all organisms are linked to each other and their physical environments through the transfer and transformation of matter and energy by relating the carbon cycle to global climate change.
- [10] SD.3.1 The student demonstrates an understanding of cycles influenced by energy from the sun and by Earth's position and motion in our solar system by describing causes, effects, preventions, and mitigations of human impact on climate.
- [10-11] SE.3.1 The student demonstrates an understanding of how scientific discoveries and technological innovations affect our lives and society by researching a current problem, identifying possible solutions, and evaluating the impact of each solution.

## Materials:

- Computer with Internet access (optional)
- OVERHEAD: "Carbon Emissions, CO<sub>2</sub> Concentrations, and Temperature"
- STUDENT INFORMATION SHEET: "Growing California Glaciers and Carbon Calculations"
- STUDENT WORKSHEET: "Carbon Footprint"
- STUDENT WORKSHEET: "Climate Change Mitigation and Adaptation"

## Activity Procedure:

1. Ask students if they know the meaning of the phrase "carbon footprint." If necessary, explain that a carbon footprint is the amount of carbon a person uses on average. Since carbon is one of Earth's natural resources, a carbon footprint indicates how much of Earth's natural resources an individual uses. Explain that every time Earth's natural fuel reserves are used, carbon dioxide is emitted into the atmosphere.
2. Ask students if they know why someone would want to know their carbon footprint. Explain the more we consume, the bigger our footprint. Each time we consume, for example, purchase something at the store or drive a vehicle, we use Earth's natural resources directly or indirectly. Knowing a person's carbon footprint and how it compares to the carbon footprint of others can help students to identify how Earth is impacted by their actions.

## H. Jeopardy

# Jeopardy

Global Warming	Greenland & Potable Water	Innovation	What Can You Do?	Believers or Skeptics?
<u>\$100</u>	<u>\$100</u>	<u>\$100</u>	<u>\$100</u>	<u>\$100</u>
<u>\$200</u>	<u>\$200</u>	<u>\$200</u>	<u>\$200</u>	<u>\$200</u>
<u>\$300</u>	<u>\$300</u>	<u>\$300</u>	<u>\$300</u>	<u>\$300</u>
<u>\$400</u>	<u>\$400</u>	<u>\$400</u>	<u>\$400</u>	<u>\$400</u>
<u>\$500</u>	<u>\$500</u>	<u>\$500</u>	<u>\$500</u>	<u>\$500</u>

Final Jeopardy

## Final Jeopardy

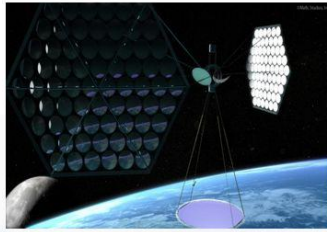
*This method uses electrical energy and high temperatures to break down large amounts of waste*





## Satellite Based Solar Power (SBSP)

Gathers energy from sunlight in space and transmits it to Earth



IPRO 331 Global Warming

## What is Climate Engineering?

- Deliberately manipulate the Earth's climate to counteract the effect of global warming

### Two Goals:

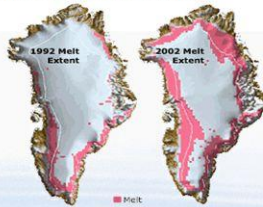
- Decrease amount of sunlight reaching the surface
- Decreasing amount of CO<sub>2</sub> in atmosphere



IPRO 331 Global Warming

## Why Greenland?

- Fastest warming place on the Earth
- Polar amplification effect
- Can be used to predict how much Earth will warm in next hundred years
- Average temperature of ice caps rose 4°C/ 7.2°F in past decade



<http://earthobservatory.nasa.gov/Features/vanishing/>  
IPRO 331 Global Warming

## What is the Problem?

- Pollution – Contamination due to Agricultural fertilizers
- Overconsumption will cause its scarcity
- Climate Change – potable water is mixing with sea water due to sea level rise



IPRO 331 Global Warming

## Green Architecture



IPRO 331 Global Warming

Is it expensive to built a smart house?

### Uh oh..... Quiz 4

How much is Bill Gate's smart house estimated to be worth?

- a. \$113 million
- b. \$75 million
- c. \$55 million
- d. \$15 million
- e. \$5 bucks



IPRO 331 Global Warming