



# Houston: Energy City of the Future 2050

*Coordinated by the Education Foundation of Harris County*

Dear Harris County Students and Teachers,

**Congratulations!** You have an opportunity to help Houston plan the way it will use energy in the year 2050! It will be up to you and other members of your 4-person student team to come up with a plan for how Houston will retain its title of *Energy Capital of the World*, so you have to make sure your plan helps Houston's economy, environment, and people!

- \* You will make a choice from a short list of possible areas of focus for your research about the future;
- \* Each area involves the way people use energy now and possible ways Houston may relate to energy in the future;
- \* Focusing creative attention on what interests you, you will then create a PSA, a Power Point and a Scale Model;
- \* There will be a judged competition on Saturday, May 14<sup>th</sup>, 2016 at the Harris County Department of Education.

Here are the rules and more information about participating in *Houston: Energy City of the Future 2050*.

- Register at the competition website [www.energycityofthefuture.com](http://www.energycityofthefuture.com), where team members and teachers can also download project guidelines, and receive updates on competition information. Teams are comprised of 4 students per team, each enrolled in 6<sup>th</sup> through 12<sup>th</sup> grade in Harris County.
- Participants register for either the middle school or the high school competition. Teams participating in the middle school competition must be made up entirely of students in grades 6-8. Teams participating in the high school competition must be made up entirely of students in grades 9-12.
- Teachers may sponsor multiple 4-person student teams if they desire and schools often enter multiple teams. All participants agree to abide by the rules of the *Energy City of the Future* competition.
- Teams must have the technological capacity to create the PowerPoint, to download files and forms, and send/receive e-mail (including e-mail attachments) in PowerPoint, Microsoft Word, and Adobe Acrobat.
- On 5/14/16, teams will show their PowerPoint presentations and Public Service Announcements in a predetermined order. Teams have 7 minutes in which to make their PowerPoint presentations. Following each presentation, judges have 3 minutes to question the presenting team about its project. Each team has 1 minute in which to show its PSA. Media releases are required of all participants.
- On 5/14/16, teams each get 1 table on which to place scale models. Models entered in the competition will be on public display at the Harris County Department of Education for a full week prior to May 14. Our television stations and media outlets in Houston will all be invited to interview students on May 14!

With much appreciation,

Deborah Huston, Chair  
Education Foundation of Harris County

Angie Chestnut, President  
Board of Trustees of the Harris County Department of Education



## THREE COMPETITION COMPONENTS – PSA, POWER POINT, SCALE MODEL

Each 4-person student team will create three components for presentation and display at the *Energy City of the Future* competition finals on May 14, 2016. Those three components are: (1) a seven-minute PowerPoint presentation; (2) a one-minute public service announcement; and (3) a scale model of Houston in the year 2050. Each component has its own deadline and requirements. Read the following component descriptions for further explanation.

Teams are to explore one or more areas in which to focus their research and efforts on how Houston – *the Energy Capital of the World!* – will use energy in the future: **(1) engineering, computer sciences, and environmental & biological technologies; (2) business and industry; (3) arts and humanities; (4) public services, medicine and healthcare; (5) multidisciplinary studies.** Your team’s plan and each of your three components should relate to one or more of these categories specifically, and address how activity in the city and in one or more of Houston’s industries (as representative of the selected categories) will become increasingly energy efficient, more environmentally sound, more “user friendly”, and be economically profitable in the year 2050.

**It is a fact that the above categories reflect the Endorsements in House Bill 5 (HB5)! Teachers can use the Energy City competition to accelerate learning in all five endorsement areas.** The Foundation High School Program (FHSP) governed by the State Board of Education requires that students “specify in writing an endorsement that students intend to earn upon entering Grade 9”. Endorsements are clusters of related courses grouped by subject area or skill set. Students can choose among 5 different coursework pathways and must complete at least one to graduate under FHSP; high school students have to make a final decision before 11<sup>th</sup> grade! Energy City teams may therefore explore endorsement area(s) for their focus and consider how energy use will impact activity and commerce. Teams will explain their plans for the future using PowerPoint, a PSA and a scale model of the future city, showing Judges how their future city works and what their future city has that sustains Houston’s place as *the Energy Capital of the World* in 2050!

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### 1. Public Service Announcement (1 Minute Maximum) 20% of Total Score

**DUE ELECTRONICALLY: NO LATER THAN 4:00 P.M. ON MAY 6, 2016**

The Public Service Announcement (PSA) provides your team with a chance to convince potential visitors that Houston is a wonderful place to live, as a result of your plan for Houston in the year 2050. Think of this as a digital tourism commercial that would air globally. The guidelines are:

- Your PSA should be no more than one (1) minute in length. Points will be deducted from those presentations that grossly exceed and/or grossly fall short of the one-minute limit.
- Your PSA should be electronically recorded and capable of being viewed on a computer with PowerPoint capabilities.
- See PSA rubric for additional guidance on inclusion of endorsement area(s) and focus industries.

**Submission requirements:** The e-mail to which your PSA is attached when submitted must clearly identify your school & team in the email title. Your PSA itself may not identify your school and/or school district. Send to [submissions@energycityofthefuture.com](mailto:submissions@energycityofthefuture.com).



## 2. PowerPoint Presentation (7 Minute Maximum)

35% of Total Score

**DUE ELECTRONICALLY: NO LATER THAN 4:00 P.M. ON MAY 6, 2016**

This is your chance to tell Judges how your plan for Houston maintains its status as the **Energy Capital of the World** in 2050. It presents Houston as it would be if your plan is actually implemented by 2050.

This is your team's chance to show that your plan is innovative and feasible. Keep in mind that a) competition Judges will be looking for the actual science your plan is demonstrating, b) your score improves if your plan includes a balance of three energy sources with one source being either oil or gas, and c) your score improves even further if information in one of the PowerPoint slides also explains how your plan ties to more than one endorsement area category. Your PowerPoint should be persuasive in tone and provide answers to each of the following questions:

### ***Slide 1: Supply***

The Energy Market: Describe Houston's commercially viable energy supplies that will be available in 2050. (Oil, gas, coal, electrical power, nuclear, wind, solar, hydro, geothermal)

### ***Slide 2: Demand***

Describe how changes in the demand for energy sources have evolved in the 2050 market.

### ***Slide 3-9: Your Plan***

What is your proposed recommendation(s) for Houston to improve energy diversity and/or use? The future market will still rely on *oil and gas* as a source of energy; therefore, include oil or gas and consider at least two forms of alternative energy. Please explain the following as part of your plan.

- A. What technological advancements will be needed? How will your plan be phased in over time?
- B. What will your plan cost? What are some of the challenges of implementing your plan?
- C. How does your plan affect daily life, transportation and recreation in the city?

### ***Slide 10 and 11: Endorsement Area(s) and Focus Industries***

How will Houston industries benefit from your plan? Which industries, particularly?

What type of employees and training will be required for Houston's future workforce in each industry or activity that you have identified?

### **Potential Questions from the Judges**

Be prepared to answer the following questions orally in dialogue with the judges on competition day:

- How will your plan make Houston more energy efficient and environmentally sound?
- How will your plan make Houston more economically profitable/grow the job market?
- Does your plan draw connections between the myriad different activities and industries imaginable in the endorsement areas you choose to explore? How exactly?
- Who will be responsible for implementing your plan? Who will pay for it?
- Are there any potential roadblocks or risks associated with the timeline for implementing your plan?
- Why is your plan the best plan for Houston's energy use in the year 2050?
- What surprised you the most in conducting your research for the plan?
- What is your favorite part of your plan?

**Submission Requirements:** The e-mail to which your PowerPoint is attached when submitted must clearly identify your school & team in the email title but the PowerPoint itself may not identify your school and/or school district. Send to [submissions@energycityofthefuture.com](mailto:submissions@energycityofthefuture.com).



### 3. Scale Model of Houston in the Year 2050

45% of Total Score

**DUE AT THE HARRIS COUNTY DEPARTMENT OF EDUCATION ON MAY 6, 2016**

The scale model is your opportunity to show the community what Houston would look like if your plan for the city were to be implemented. Creativity is encouraged and keep in mind that competition judges will be looking for Energy Efficiency, Environmental Quality, Economic Profitability and the connection to endorsement area(s) and focus industries. Your model will be on public display the week prior to the finals competition. Your scale model should conform to the following guidelines:

#### **Construction Requirements**

Your team will showcase its scale model at the *Energy City of the Future* finals competition. Adhere to the following guidelines when constructing your scale model:

- Your model may not be larger than 70" (length) by 22" (width) by 30" (height).
- Your model may include moving parts, but no electricity will be provided at the finals.
- Your model may be built of any materials EXCEPT:
  - Open liquids (including water)
  - Dangerous chemicals (e.g. carcinogenic, mutagenic, or highly corrosive chemicals, narcotics or addictive drugs, alcohol, tobacco, flammable, explosive, or highly toxic chemicals, radioactive materials, and gases under high pressure)
  - Dangerous equipment (e.g. equipment requiring 200V or greater, welding equipment, equipment producing unshielded ionized radiation, equipment which produces or utilizes x-rays or nuclear energy or high temperatures, firearms, and other equipment normally considered dangerous to operate).
  - Controlled substances, including DEA-classed substances, prescription drugs, alcohol, and tobacco
  - Living or preserved organisms (including their parts), microbial cultures (bacterial or viral) or fungi
  - Human or animal food, sharp items (e.g. syringes, needles, pins), dry ice or other sublimating solids
  - Batteries with open top cells, devices which emit loud noises, devices which require more than 125v
  - Class III or IV lasers (Class II lasers must have a sign stating: *Laser Radiation: do not stare into beam*, have protective housing that prevents access to beam, and be disconnected when not operating)
  - Unshielded belts, pulleys, chains, or moving parts with tension or pinch points
- You may not spend or use more than \$50.00 of purchased materials to create your model. Teams may use unlimited recycled, recyclable, and/or refurbished materials and must complete a *Materials Used Form* which will be available for download at the website.
- See the Scale Model Rubric for additional guidance.

#### **Submission Requirements**

Please adhere to the following guidelines when submitting your scale model for evaluation:

- Your completed scale model must be delivered to the Harris County Department of Education on Friday, May 6, 2016 for public display during the week prior to the finals competition on May 14th.
- Your completed *Materials Used Form* must also be returned that day or prior to that day.
- Your scale model may not identify your school and/or school district.