

National Engineers Week

# future City

COMPETITION

# Judges Manual

2011-2012



The Future City Competition is a national project-based learning experience for students in 6<sup>th</sup>, 7<sup>th</sup>, and 8<sup>th</sup> grades to imagine, design, and build cities of the future.

[www.futurecity.org](http://www.futurecity.org)



Future City is a program of the National Engineers Week Foundation

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# Welcome!

Thank you for volunteering to serve as a judge for the Future City Competition. Students, educators, and engineer mentors have put in countless hours over the last several months to create the materials that you are judging. As you start to review the various student entries you will see their remarkable capacity for learning about our world and envisioning what the future may hold. Each year the creativity and poise of our students are a source of pride and amazement. While the competition's primary objective is to promote an interest in engineering, we know that our students have an opportunity to flex their problem-solving skills, learn a valuable lesson about the power of teamwork, and increase their motivation to study science, math and engineering.

## The Future City Competition

Across the country, teams of middle school students work with educators and engineer mentors to build cities of the future. Student teams plan cities with SimCity™4 Deluxe software; build tabletop scale models with recycled materials; research and write solutions to an engineering problem; and present their ideas before judges at Regional Competitions in January. Regional winners represent their region at the National Finals in Washington, DC in February.



### **Future City engages kids in engineering and so much more....**

This flexible, cross-curricular educational program gives students in 6th, 7th, and 8th grades an opportunity to do the things that engineers do—identify problems; brainstorm ideas; design solutions; test, retest and build; and share their results. This process is called the engineering design process. With this at its center, Future City is an engaging way to build students' 21st century skills. Students participating in Future City:

- Apply math and science concepts to real-world issues
- Develop writing, public speaking, problem solving, and time management skills
- Research and propose solutions to engineering challenges
- Discover different types of engineering and explore careers options
- Learn how their communities work and become better citizens
- Develop strong teamwork skills

## How does the Competition work?

The Future City Competition is made up of five components. Teams are judged and scored on each of the five components and can earn up to 400 points.

|                     |                   |
|---------------------|-------------------|
| Virtual City Design | 100 points        |
| Research Essay      | 70 points         |
| City Narrative      | 20 points         |
| Physical Model      | 120 points        |
| Team Presentation   | 90 points         |
| <b>Total</b>        | <b>400 points</b> |

Learn more about each component by going to [www.futurecity.org/stepbystep](http://www.futurecity.org/stepbystep).



## Your role as a judge

As a judge it is your job to draw on your expertise and to utilize Future City's assessment tools to evaluate the teams efforts. In most cases, a panel of judges will review each component. The scores are then averaged to compute a team's final score for each component.

Talk to your Regional Coordinator about what component(s) you would like to judge and if they offer any local training sessions. Go to [www.futurecity.org](http://www.futurecity.org) and click on *Find My Region* to contact your Regional Coordinator.

### How to score a team's work

Before you start judging become familiar with the component(s) you are judging – learn more about them at [www.futurecity.org/stepbystep](http://www.futurecity.org/stepbystep). Next review the component's assessment rubric and the corresponding score sheet (located in this manual). But the most important thing is to remember that this competition is for students in 6th, 7th, and 8th grades.

#### ASSESSMENT RUBRICS

Each component has a detailed and thorough rubric that outlines how the component is to be scored. The rubrics are divided into categories and can have anywhere from 1 to 7 items under each category. The rubrics were developed to help ensure consistent scoring from judge to judge and from region to region. However, we recognize that the criteria cannot cover all possible situations. Judges need to examine the specific elements of each entry and determine a score that is consistent with the rubric and accurately reflects the quality of the team's effort.

#### SCORE SHEETS

The score sheets follow the outline of the rubrics and give you an easy way to record your score for each team. You will complete a score sheet for each team you are judging. The completed score sheets are then returned to the Regional Coordinator.

If you have any questions don't hesitate to contact your Regional Coordinator or the National Program Manager.

# The Virtual City Design Rubric

Students use SimCity™ 4 Deluxe software to design a virtual city that has progressed at least 150 years in the future and has a population of at least 50,000 residents.

| 0  | 1   | 2  | 3  |
|--|---|--|--|
| <b>No Points</b><br>Requirements missing | <b>Poor</b><br>Poor-Fair quality. Fulfills less than 50% of requirements. | <b>Good</b><br>Average-Above average quality. Fulfills at least 90% of requirements. | <b>Excellent</b><br>Excellent quality. Fulfills 100% of requirements. Additional distinctive features. |

| I. CITY MANAGEMENT CRITERIA (12 POINTS)   | 0  | 1  | 2  | 3   |
|---|--|--|--|---|
| <b>1. City age</b><br>• At least 150 years  | Age ≤ 10 years.  | Age ≤ 100 years.   | Age ≤ 150 years.   | Age > 150 years   |
| <b>2. City population</b><br>• At least 50,000  | Population ≤ 5,000.  | Population ≤ 25,000.   | Population ≤ 50,000.   | Population > 50,000.  |
| <b>3. Budget management</b><br>• Income > expenses<br>• Well-managed budget<br>• Performance over time                            | Unbalanced budget.   | Balanced < 25% of time.  | Balanced < 75% of time.                                      | Balanced > 75% of time.   |
| <b>4. Mayor performance</b><br>• Opinion polls<br>• Mayor rating  | Impeach! < 3 polls green. Mayor rating < 20 (avg for 10 yrs). Data view red to dark green. | > 3 polls green. Avg mayor rating > 20. Data view dark green to green. | > 4 polls green. Avg. mayor rating > 50. Data view green.    | All polls green. Avg. mayor rating > 60. Data view green.           |
| II. CITY LAYOUT CRITERIA (21 POINTS)  | 0  | 1  | 2  | 3   |
| <b>5. Residential development</b><br>• R § (low wealth)<br>• R §§ (medium wealth)<br>• R §§§ (high wealth)                        | No development.  | One level of residential development.                                  | Two levels of residential development.                       | All three levels of residential development.                        |
| <b>6. Industrial development</b><br>• I-Ag (agriculture)<br>• I-D (dirty industry)<br>• I-M (manufacturing)<br>• I-HT (high-tech) | No industrial jobs.  | Jobs in 1-2 industry segments.   | Jobs in 3 industry segments.                                 | Jobs in all 4 industry segments.                                    |
| <b>7. Greener, cleaner industry</b><br>• Employment shifting from I-D (dirty) to I-M and I-HT                                     | Few manufacturing or high-tech jobs (less than 25%).                                       | 25-50% of industrial jobs are in manufacturing or high-tech.           | 50-75% of industrial jobs are in manufacturing or high-tech. | More than 75% of industrial jobs are in manufacturing or high-tech. |

# Virtual City Design Rubric

**0  
No Points**  
Requirements missing

**1  
Poor**  
Poor-Fair quality. Fulfills less than 50% of requirements.

**2  
Good**  
Average-Above average quality. Fulfills at least 90% of requirements.

**3  
Excellent**  
Excellent quality. Fulfills 100% of requirements. Additional distinctive features.

| II. CITY LAYOUT CRITERIA (continued)  | 0  | 1   | 2   | 3   |
|---|--|---|---|---|
| <b>8. Commercial development</b> <ul style="list-style-type: none"> <li>Commercial Service               <ul style="list-style-type: none"> <li>Cs § (low wealth)</li> <li>Cs §§ (medium wealth)</li> <li>Cs §§§ (high wealth)</li> </ul> </li> <li>Commercial Office               <ul style="list-style-type: none"> <li>Co §§ (medium wealth)</li> <li>Co §§§ (high wealth)</li> </ul> </li> </ul>       | No commercial jobs.  | Jobs in commercial service segments only.                                     | Jobs in commercial service and office segments.   | Jobs in all 5 commercial segments.                                    |
| <b>9. Is development thriving?</b> <ul style="list-style-type: none"> <li>Degraded (gray) or abandoned (black) buildings in the residential, industrial or commercial zones</li> </ul>  | Over 50% of development degrading or abandoned.                      | Some (20-50%) of development degrading or abandoned.                          | Small amount (5-20%) of the development degrading or abandoned.                                     | Vibrant city with little (<5%) of development degrading or abandoned. |
| <b>10. Recreation facilities</b> <ul style="list-style-type: none"> <li>Ratio of parks &amp; recreation facilities to population (50:100K)</li> <li>Well-funded facilities</li> </ul>   | Less than 15 areas per 100,000 residents. (Ratio < 0.00015)          | At least 15 areas per 100,000 residents. (Ratio ≥ 0.00015)                    | At least 30 areas per 100,000 residents. (Ratio ≥ 0.0003)   | At least 50 areas per 100,000 residents. (Ratio ≥ 0.0005)             |
| <b>11. City Planning</b> <ul style="list-style-type: none"> <li>City design is well-thought out, cohesive and structured               <ul style="list-style-type: none"> <li>Zoning, neighborhoods</li> <li>Traffic and transportation routes</li> <li>Functionality and mixed-use areas</li> <li>Downtown, amenities</li> <li>Eco-management, sustainability, landscape management</li> </ul> </li> </ul> | No apparent plan.  | Some evidence of planning, but mostly evolutionary development.               | Evidence of a plan, but execution could be better.  | Well-thought out plan is evident.                                     |
| III. CITY SERVICES (18 POINTS)  | 0  | 1   | 2   | 3   |
| <b>12. Police coverage</b> <ul style="list-style-type: none"> <li>Adequate police coverage of populated areas</li> <li>No serious crimes</li> </ul>   | Little (<50%) police coverage.                                       | Some (approx. 50% to 90%) police coverage. Incidence of serious (red) crimes. | Adequate (>90% to 95%) police coverage - not all populated areas covered. Few serious (red) crimes. | Complete (>95%) police coverage. No serious (red) crimes.             |
| <b>13. Police effectiveness</b> <ul style="list-style-type: none"> <li>Number of arrests tracks the number of crimes</li> <li>Performance over time</li> </ul>  | Crimes far out number arrests.                                       | 20% or more variance in crimes over arrests.                                  | Less than 20% variance in crimes over arrests. Trend improving through time.                        | Arrests closely track crimes over life of city.                       |
| <b>14. Fire coverage</b> <ul style="list-style-type: none"> <li>Adequate fire coverage of populated areas</li> <li>Effective control of fire hazards</li> </ul>   | Little (<50%) fire coverage. Majority of city is dark orange to red. | Some (approx. 50% to 90%) fire coverage. Orange to red.                       | Adequate (>90% to 95%) fire coverage - not all populated areas covered. Orange.                     | Complete (>95%) fire coverage. Yellow to light orange.                |

# Virtual City Design Rubric

**0**  
**No Points**  
Requirements missing

**1**  
**Poor**  
Poor-Fair quality. Fulfills less than 50% of requirements.

**2**  
**Good**  
Average-Above average quality. Fulfills at least 90% of requirements.

**3**  
**Excellent**  
Excellent quality. Fulfills 100% of requirements. Additional distinctive features.

| III. CITY SERVICES (continued)  | 0   | 1   | 2   | 3   |
|---|---|---|---|---|
| <b>15. Medical coverage</b> <ul style="list-style-type: none"> <li>Adequate coverage of residential areas</li> <li>Healthy population</li> </ul>  | No medical facilities present.  | Some (approx. 50% to 90%) coverage in residential areas. Red to dark green.   | Adequate (>90% to 95%) coverage in residential areas. Dark green to green.                | Complete (>95%) coverage in residential areas. Green to light green.                          |
| <b>16. Education</b> <ul style="list-style-type: none"> <li>Adequate coverage of residential areas</li> <li>Educated population</li> </ul>  | No educational institutions.  | Some (approx. 50% to 90%) coverage in residential areas. Red to dark green.   | Adequate (>90% to 95%) coverage in residential areas. Dark green to green.                | Complete (>95%) coverage in residential areas. Green to light green.                          |
| <b>17. Life-long learning</b> <ul style="list-style-type: none"> <li>Variety of education facilities</li> <li>Education quotient high across all age groups</li> </ul>  | EQ is less than 120 for majority of the population.                   | EQ is 120 or higher in 3 or more age groups.                                  | EQ is 120 or higher in 6 or more age groups.  | EQ is 120 or higher in all age groups.  |
| IV. ENERGY AND POLLUTION (18 POINTS)  | 0   | 1   | 2   | 3   |
| <b>18. Power coverage</b> <ul style="list-style-type: none"> <li>Power to all areas of the city</li> <li>Generation capacity sufficient to satisfy needs</li> <li>Performance over time</li> </ul>  | Few areas (< 50%) have power. Demand exceeds capacity.                | Some of city (>50%) has power. Some periods of inadequate capacity.           | Most of city (> 90%) has power. Sufficient generation capacity majority of time.          | All (100%) areas have power. Sufficient generation capacity over life of city.                |
| <b>19. Renewable energy sources</b> <ul style="list-style-type: none"> <li>Renewable sources: wind, solar, hydrogen</li> <li>Portion of total capacity</li> </ul>   | No renewable fuel sources.  | 1 form of renewable power.  | Two or more forms of renewable power provide a portion of the capacity.                   | Two or more forms of renewable power provide 100% of capacity.                                |
| <b>20. Water coverage</b> <ul style="list-style-type: none"> <li>Water to all areas of the city</li> <li>Supply capacity sufficient to satisfy needs</li> <li>Performance over time</li> </ul>  | Few areas (<50%) have water. Demand exceeds capacity.                 | Some of city (>50%) has water. Some periods of inadequate capacity.           | Most of city (>90%) have water. Sufficient capacity majority of the time.                 | All (100%) areas have water. Sufficient capacity over life of city.                           |
| <b>21. Garbage disposal</b> <ul style="list-style-type: none"> <li>Forms of garbage disposal: landfills, recycling, waste-to-energy plants</li> <li>Disposal capacity adequate to satisfy needs</li> <li>Garbage pollution under control</li> </ul> | No forms of garbage disposal. Pollution high.                         | At least 1 form of garbage disposal. Demand exceeds capacity. Pollution high. | One or more forms of garbage disposal. Adequate capacity. Little or no garbage pollution. | Two or more forms of garbage disposal. Adequate capacity. No indication of garbage pollution. |
| <b>22. Recycling facilities</b> <ul style="list-style-type: none"> <li>Sufficient capacity</li> <li>Ratio of facilities to residents (1:25K)</li> </ul>   | No recycling centers.   | Less than 1 recycling center per 50,000 residents.                            | Less than 1 recycling center per 25,000 residents.  | At least 1 recycling center per 25,000 residents.   |
| <b>23. Air and water pollution</b> <ul style="list-style-type: none"> <li>Air pollution under control</li> <li>Water pollution under control</li> </ul>   | Pollution (air OR water) covers more than 75% of city. Yellow to red. | Pollution (air OR water) covers 50-75% of city. Yellow to red.                | Pollution (air AND water) covers less than 50% of city. Yellow to orange.                 | Pollution (air AND water) covers less than 25% of city. Predominately yellow.                 |

# Virtual City Design Rubric

**0**  
**No Points**  
Requirements missing

**1**  
**Poor**  
Poor-Fair quality. Fulfills less than 50% of requirements.

**2**  
**Good**  
Average-Above average quality. Fulfills at least 90% of requirements.

**3**  
**Excellent**  
Excellent quality. Fulfills 100% of requirements. Additional distinctive features.

| V. TRANSPORTATION (21 POINTS)  | 0   | 1  | 2  | 3   |
|--|---|--|--|---|
| <b>24. Road congestion</b> <ul style="list-style-type: none"> <li>Traffic flow, congestion</li> <li>Road repair, potholes (inadequate funding)</li> </ul>  | Traffic jam! Most of roads (>75%) are congested (orange to red) or roads impassable (potholes). | Many roads (30-75%) are congested (orange to red). Some need repair.                 | Some roads (10-30%) are congested (orange to red). No potholes.                                  | Traffic flows freely. Less than 10% congestion (orange to red). No potholes.  |
| <b>25. Public Transportation</b> <ul style="list-style-type: none"> <li>Sims using the Public Transportation Systems</li> <li>Number of systems:               <ul style="list-style-type: none"> <li>Bus</li> <li>Subway</li> <li>Monorail</li> <li>Passenger train</li> <li>Ferry</li> </ul> </li> </ul>   | No public transportation systems.   | 1 or more systems built. Sims not using them.  | Sims using at least 1 public transportation system.  | Sims using 2 or more public transportation systems.   |
| <b>26. Public Transportation–integrated systems</b> <ul style="list-style-type: none"> <li>Integrated systems</li> <li>Adequate coverage throughout the city</li> </ul>  | No public transportation systems.   | Public transportation covers only part (<50%) of the city. Systems lack integration. | Public transportation covers most (>50%) of the city. Could be better integrated.                | Public transportation provides excellent coverage throughout (>90%) city. Well-integrated systems.                    |
| <b>27. Commute times</b> <ul style="list-style-type: none"> <li>Average commute time</li> <li>Performance over past 10 years</li> </ul>  | Commute time of more than 100 minutes.  | Commute time of 100 minutes or less.   | Commute time of 75 minutes or less.  | Commute time of 50 minutes or less.   |
| <b>28. Freight transportation</b> <ul style="list-style-type: none"> <li>Sims using the freight transportation systems</li> <li>Number of systems               <ul style="list-style-type: none"> <li>Freight truck</li> <li>Freight train</li> <li>Seaport</li> </ul> </li> </ul>  | No freight transportation systems used.   | 1 or more systems built. Sims (industry) not using them.                             | Industry using at least 1 freight transportation system.   | Industry using 2 or more freight transportation systems.  |
| <b>29. Efficient freight movement</b> <ul style="list-style-type: none"> <li>Integrated systems</li> <li>Short freight trips</li> </ul>  | No freight transportation.  | Few industrial facilities (< 50%) have short freight trips.                          | Most industrial facilities (> 50%) have short freight trips.                                     | Freight moves efficiently throughout (> 90%) industrial area.   |
| <b>30. Airport</b> <ul style="list-style-type: none"> <li>Airport built               <ul style="list-style-type: none"> <li>Landing strip (not fire department landing strip)</li> <li>Municipal airport</li> <li>International airport</li> </ul> </li> <li>Airport well-funded</li> <li>Supports Co (Commercial Office) development               <ul style="list-style-type: none"> <li>Road and public transportation connections</li> <li>Direct connection to Co zone(s)</li> </ul> </li> </ul> | No airport.   | Airport is present. Partially funded. No traffic connection to Co.                   | Airport (any type) present. Well funded. Some connection to Co development, but could be better. | Municipal or International airport. Fully funded. Excellent traffic connections to city's major Co development areas. |

# Virtual City Design Score Sheet

## (0 to 90 points)

Directions: Check the appropriate box and then place score in right score column.

Judge's Name: \_\_\_\_\_

Future City Name: \_\_\_\_\_

School Name: \_\_\_\_\_

**0 No Points**  
Requirements missing

**1 Poor**  
Fulfills less than 50% of requirements.

**2 Good**  
Fulfills at least 90% of requirements.

**3 Excellent**  
Fulfills 100% of requirements. Additional distinctive features.

| I. CITY MANAGEMENT CRITERIA (12 POINTS)  | 0 | 1 | 2 | 3 | SCORE |
|--|---|---|---|---|-------|
| 1. <b>City age:</b> at least 150 years   |   |   |   |   |       |
| 2. <b>City population:</b> at least 50,000   |   |   |   |   |       |
| 3. <b>Budget management:</b> Income > expenses; well-managed budget; performance over time   |   |   |   |   |       |
| 4. <b>Mayor performance:</b> Opinion polls; Mayor rating   |   |   |   |   |       |
| II. CITY LAYOUT CRITERIA (21 POINTS)   | 0 | 1 | 2 | 3 | SCORE |
| 5. <b>Residential development:</b> 3 levels (low, medium and high-wealth) present (R \$, \$\$, \$\$\$)   |   |   |   |   |       |
| 6. <b>Industrial development:</b> Jobs in all 4 segments (I-Ag, I-D, I-M, I-HT)  |   |   |   |   |       |
| 7. <b>Greener, cleaner industry:</b> Employment shifting from I-D (dirty) to I-M and I-HT  |   |   |   |   |       |
| 8. <b>Commercial development:</b> (Service \$, \$\$, \$\$\$ and Office \$\$, \$\$\$)   |   |   |   |   |       |
| 9. <b>Is development thriving?</b> Degraded (gray) or abandoned (black) buildings in the residential, industrial or commercial zones   |   |   |   |   |       |
| 10. <b>Recreation facilities:</b> Ratio of well-funded parks & recreation facilities to population   |   |   |   |   |       |
| 11. <b>City Planning:</b> city design is well-thought out, cohesive and structured; zoning, neighborhoods; traffic and transportation routes; functionality and mixed-use areas; downtown, amenities; eco-management, sustainability, landscape management |   |   |   |   |       |
| III. CITY SERVICES (18 POINTS)   | 0 | 1 | 2 | 3 | SCORE |
| 12. <b>Police coverage:</b> adequate police coverage of populated areas; no serious crimes   |   |   |   |   |       |
| 13. <b>Police effectiveness:</b> # of arrests closely tracks the 3 of crimes over the life of the city   |   |   |   |   |       |
| 14. <b>Fire coverage:</b> adequate fire coverage of populated areas; effective control of fire hazards   |   |   |   |   |       |

| IV. ENERGY AND POLLUTION (18 POINTS)   | 0 | 1 | 2 | 3 | SCORE |
|--|---|---|---|---|-------|
| <b>15. Medical coverage:</b> adequate coverage of residential areas; healthy population  |   |   |   |   |       |
| <b>16. Education:</b> adequate coverage of residential areas; educated population  |   |   |   |   |       |
| <b>17. Life-long learning:</b> variety of education facilities; education quotient high across all age groups  |   |   |   |   |       |
| <b>18. Power coverage:</b> power to all areas of the city, generation capacity sufficient to satisfy needs; performance over time  |   |   |   |   |       |
| <b>19. Renewable energy sources:</b> renewable sources: wind, solar, hydrogen; portion of total capacity   |   |   |   |   |       |
| <b>20. Water coverage:</b> water to all areas of the city; supply capacity sufficient to satisfy needs; performance over time  |   |   |   |   |       |
| <b>21. Garbage disposal:</b> forms of garbage disposal: (landfills, recycling, waste-to-energy plants); disposal capacity adequate to satisfy needs; garbage pollution under control |   |   |   |   |       |
| <b>22. Recycling facilities:</b> sufficient capacity; ratio of facilities to residents (1:25K)   |   |   |   |   |       |
| <b>23. Air and water pollution:</b> air pollution under control; water pollution under control   |   |   |   |   |       |
| V. TRANSPORTATION (21 POINTS)  | 0 | 1 | 2 | 3 | SCORE |
| <b>24. Road congestion:</b> traffic flow, congestion; road repair, potholes (inadequate funding)   |   |   |   |   |       |
| <b>25. Public Transportation:</b> Sims using the public transportation systems (bus, subway, monorail, passenger train, ferry)   |   |   |   |   |       |
| <b>26. Public Transportation—integrated systems:</b> integrated systems; adequate coverage throughout the city   |   |   |   |   |       |
| <b>27. Commute times:</b> average commute time; performance over past 10 years   |   |   |   |   |       |
| <b>28. Freight transportation:</b> Sims using the freight transportation systems (freight truck, freight train, seaport)   |   |   |   |   |       |
| <b>29. Efficient freight movement:</b> integrated systems; short freight trips   |   |   |   |   |       |
| <b>30. Airport:</b> built, well-funded, supports commercial office (Co) development  |   |   |   |   |       |

**Computer Design Points** \_\_\_\_\_

**Less Deductions (Cheats)** \_\_\_\_\_

**Total Points** \_\_\_\_\_

# The Research Essay Rubric

Students use SimCity™ 4 Deluxe software to design a virtual city that has progressed at least 150 years in the future and has a population of at least 50,000 residents.

| 0  | 1   | 2  | 3  |
|--|---|--|--|
| <b>No Points</b><br>Requirements missing | <b>Poor</b><br>Poor-Fair quality. Fulfills less than 50% of requirements. | <b>Good</b><br>Average-Above average quality. Fulfills at least 90% of requirements. | <b>Excellent</b><br>Excellent quality. Fulfills 100% of requirements. Additional distinctive features. |

| <b>I. DEFINE THE PROBLEM, PROPOSE SOLUTION (6 POINTS)</b>   | 0   | 1  | 2   | 3  |
|---|---|--|---|--|
| <b>1. Define problem</b><br><ul style="list-style-type: none"> <li>Introduce city</li> <li>Introduce electric power systems infrastructure (transmission &amp; distribution)</li> </ul>   | No description of city or power infrastructure.           | Brief description of city and power infrastructure.          | Good introduction of city and power infrastructure.                         | Detailed introduction of city and power infrastructure.          |
| <b>2. Propose alternative energy source</b><br><ul style="list-style-type: none"> <li>Alternative energy source for power generation</li> <li>Possibly one of several sources used by city</li> <li>Offsets dependence on fossil fuels</li> </ul> | No description of alternative energy source.              | Brief description of alternative energy source.              | Good description of alternative energy source.                              | Detailed description of alternative energy source.               |
| <b>II. DESCRIBE THE TECHNOLOGY (6 POINTS)</b>   | 0   | 1  | 2   | 3  |
| <b>3. Power generation with alternative energy source</b>   | No description of the generation technology or process.   | Brief description of the generation technology or process.   | Good description of the generation technology or process.                   | Excellent description of the generation technology or process.   |
| <b>4. Transmission and distribution of generated power</b>  | No description of the transmission technology or process. | Brief description of the transmission technology or process. | Good description of the transmission technology or process.                 | Excellent description of the transmission technology or process. |
| <b>III. ANALYZE THE SOLUTION (18 POINTS)</b>  | 0   | 1  | 2   | 3  |
| <b>5. Impact on depletion of natural resources</b><br><ul style="list-style-type: none"> <li>Consider: harvesting, generation, distribution, waste disposal</li> </ul>  | No discussion of impact on natural resources.             | Brief discussion of impact on natural resources.             | Good discussion of impact on natural resources, but could be more complete. | Detailed and complete discussion of impact on natural resources. |
| <b>6. Impact on environment</b><br><ul style="list-style-type: none"> <li>Consider: harvesting, generation, distribution, waste disposal</li> </ul>   | No discussion of impact on environment.                   | Brief discussion of impact on environment.                   | Good discussion of impact on environment, but could be more complete.       | Detailed and complete discussion of impact on environment.       |

# Fuel Your Future Research Essay Rubric

| 0  | 1   | 2  | 3  |
|--|---|--|--|
| <b>No Points</b><br>Requirements missing | <b>Poor</b><br>Poor-Fair quality. Fulfills less than 50% of requirements. | <b>Good</b><br>Average-Above average quality. Fulfills at least 90% of requirements. | <b>Excellent</b><br>Excellent quality. Fulfills 100% of requirements. Additional distinctive features. |

| III. ANALYZE THE SOLUTION<br>(continued)   | 0   | 1  | 2   | 3   |
|--|---|--|---|---|
| <b>7. Benefits</b><br>• Environmental and other benefits   | No discussion of benefits.  | Some discussion of benefits.   | Good discussion of benefits, but could be more complete.                | Detailed and complete discussion of benefits.                       |
| <b>8. Risks</b>  | No discussion of risks.   | Some discussion of risks.  | Good discussion of risks, but could be more complete.                   | Detailed and complete discussion of risks.                          |
| <b>9. Additional issues</b><br>• Consider two issues (in addition to environmental)<br>• Transmission/distribution<br>• Efficiency<br>• Availability<br>• Cost<br>• Reliability<br>• Safety, security<br>• Storage<br>• Sustainability<br>• Waste management | No discussion of additional issues.                                     | Some discussion of at least one additional issue.                      | Good discussion of two additional issues, but could be more complete.   | Detailed and complete discussion of at least two additional issues. |
| <b>10. Tradeoffs</b><br>• Discuss and analyze tradeoffs (e.g., cost, efficiency, appearance)   | No discussion or analysis of tradeoffs.                                 | Brief discussion and analysis of tradeoffs.                            | Good discussion and analysis of tradeoffs.                              | Excellent discussion and analysis of tradeoffs.                     |
| IV. ASSESS INNOVATION/<br>EFFECTIVENESS (18 POINTS)  | 0   | 1  | 2   | 3   |
| <b>11. Innovative and futuristic solution</b>  | Not innovative or original.   | Somewhat original or innovative. Not futuristic.                       | Solution is innovative, original and somewhat futuristic.               | Solution is highly innovative, original and futuristic.             |
| <b>12. Plausibility of solution</b><br>• Based on sound scientific principles  | Implausible or not scientifically sound.                                | Solution is not very plausible (science fiction).                      | Solution is somewhat plausible.   | Solution is highly plausible and scientifically sound.              |
| <b>13. Accounting for identified risks</b>   | Solution does not account for identified risks. Or no risks identified. | Solution partially accounts for identified risks. Ignores major areas. | Solution adequately accounts for identified risks, but could be better. | Solution accounts for all identified risks.                         |
| <b>14. Effectiveness of solution: reduces associated risks?</b>  | Not effective.  | Solution is fairly effective.  | Solution is effective, but could be better.                             | Design is highly effective.   |
| <b>15. Effectiveness of solution: limiting environmental impact?</b>   | Not effective.  | Solution is fairly effective.  | Solution is effective, but could be better.                             | Design is highly effective.   |

# Fuel Your Future Research Essay Rubric

**0  
No Points**  
Requirements missing

**1  
Poor**  
Poor-Fair quality. Fulfills less than 50% of requirements.

**2  
Good**  
Average-Above average quality. Fulfills at least 90% of requirements.

**3  
Excellent**  
Excellent quality. Fulfills 100% of requirements. Additional distinctive features.

| <b>IV. ASSESS INNOVATION/<br/>EFFECTIVENESS (CONTINUED)</b>   | <b>0</b>  | <b>1</b>  | <b>2</b>  | <b>3</b>   |
|---|---|---|---|--|
| <b>16. Effectiveness of solution: offsetting dependence on fossil fuels?</b>  | Not effective.  | Solution is fairly effective.   | Solution is effective, but could be better.                 | Design is highly effective.                                    |
| <b>V. ROLE OF ENGINEERING (6 POINTS)</b>  | <b>0</b>  | <b>1</b>  | <b>2</b>  | <b>3</b>   |
| <b>17. Engineering disciplines involved</b>   | Engineering disciplines are not identified.   | One Engineering discipline is identified.   | More than one engineering discipline is identified.         | More than one engineering discipline is discussed.             |
| <b>18. Role of an engineer</b>  | The role of the various engineers involved in developing the solution is not discussed. | The role of at least one engineer involved in developing the solution is briefly discussed. | The role of at least one engineer is adequately discussed.  | The role of one or more engineers is well discussed.           |
| <b>VI. WRITING SKILLS (16 POINTS)</b>   | <b>0</b>  | <b>1</b>  | <b>2</b>  | <b>3</b>   |
| <b>19. Organization</b>   | Poorly organized.   | Fair organization.  | Good organization.  |  |
| <b>20. Maximum number of graphics</b><br>• If used, maximum of 4 (does not include tables)  | Exceeds maximum of 4 graphics, illustrations.   |   | Does not exceed maximum of 4 graphics and/or illustrations. |  |
| <b>21. Work appears age appropriate</b>   | Work does not appear to be age appropriate.   |   | Work appears to be age appropriate.                         |  |
| <b>22. Grammar</b>  | Many grammatical errors.  | A few grammatical errors.   | No grammatical errors.                                      |  |
| <b>23. Spelling</b>   | Many spelling errors.   | A few spelling errors.  | No spelling errors.   |  |
| <b>24. Writing skills</b>   | Poorly written.   | Fair writing skills.  | Good writing skills.  | Exceptional writing skills.                                    |
| <b>25. List of references</b><br>• At least three acceptable references<br>• Wikipedia not recognized as an acceptable reference<br>• Appropriate citations | No references.  | Less than three acceptable references.  | At least three acceptable references.                       | At least three acceptable references. All appropriately cited. |

# Fuel Your Future Research Essay

## Score Sheet (0 to 70 points)

Directions: Check the appropriate box and then place score in right score column.

Judge's Name: \_\_\_\_\_

Future City Name: \_\_\_\_\_

School Name: \_\_\_\_\_

**0 No Points**  
Requirements missing

**1 Poor**  
Fulfills less than 50% of requirements.

**2 Good**  
Fulfills at least 90% of requirements.

**3 Excellent**  
Fulfills 100% of requirements. Additional distinctive features.

| <b>I. DEFINE THE PROBLEM, PROPOSE SOLUTION (6 POINTS)</b>   | <b>0</b> | <b>1</b> | <b>2</b> | <b>3</b> | <b>SCORE</b> |
|---|----------|----------|----------|----------|--------------|
| <b>1. Define problem:</b> introduce city; introduce electric power systems infrastructure (transmission & distribution)   |          |          |          |          |              |
| <b>2. Propose alternative energy source:</b> alternative energy source for power generation; possibly one of several sources used by city, offsets dependence on fossil fuels                                       |          |          |          |          |              |
| <b>II. DESCRIBE THE TECHNOLOGY (6 POINTS)</b>   | <b>0</b> | <b>1</b> | <b>2</b> | <b>3</b> | <b>SCORE</b> |
| <b>3. Power generation with alternative energy source</b>   |          |          |          |          |              |
| <b>4. Transmission and distribution of generated power</b>  |          |          |          |          |              |
| <b>III. ANALYZE THE SOLUTION (18 POINTS)</b>  | <b>0</b> | <b>1</b> | <b>2</b> | <b>3</b> | <b>SCORE</b> |
| <b>5. Impact on depletion of natural resources:</b> consider: harvesting, generation, distribution, waste disposal  |          |          |          |          |              |
| <b>6. Impact on environment:</b> consider: harvesting, generation, distribution, waste disposal   |          |          |          |          |              |
| <b>7. Benefits:</b> Environmental and other benefits  |          |          |          |          |              |
| <b>8. Risks</b>   |          |          |          |          |              |
| <b>9. Additional issues:</b> consider two issues (in addition to environmental), transmission/distribution, Efficiency, Availability, Cost, Reliability, Safety/security, Storage, Sustainability, Waste management |          |          |          |          |              |
| <b>10. Tradeoffs:</b> discuss and analyze tradeoffs (e.g., cost, efficiency, appearance)  |          |          |          |          |              |
| <b>IV. ASSESS INNOVATION/EFFECTIVENESS (18 POINTS)</b>  | <b>0</b> | <b>1</b> | <b>2</b> | <b>3</b> | <b>SCORE</b> |
| <b>11. Innovative and futuristic solution</b>   |          |          |          |          |              |
| <b>12. Plausibility of solution:</b> Based on sound scientific principles   |          |          |          |          |              |
| <b>13. Accounting for identified risks</b>  |          |          |          |          |              |
| <b>14. Effectiveness of solution: reduces associated risks?</b>   |          |          |          |          |              |
| <b>15. Effectiveness of solution: limiting environmental impact?</b>  |          |          |          |          |              |
| <b>16. Effectiveness of solution: offsetting dependence on fossil fuels?</b>  |          |          |          |          |              |

| <b>V. ROLE OF ENGINEERING (6 POINTS)</b>  | <b>0</b> | <b>1</b> | <b>2</b> | <b>3</b> | <b>SCORE</b> |
|---|----------|----------|----------|----------|--------------|
| 17. Engineering disciplines involved  |          |          |          |          |              |
| 18. Role of an engineer   |          |          |          |          |              |
| <b>VI. WRITING SKILLS (16 POINTS)</b>   | <b>0</b> | <b>1</b> | <b>2</b> | <b>3</b> | <b>SCORE</b> |
| 19. Organization  |          |          |          |          |              |
| 20. Maximum number of graphics: if used, maximum of 4 (does not include tables)   |          |          |          |          |              |
| 21. Work appears age appropriate  |          |          |          |          |              |
| 22. Grammar   |          |          |          |          |              |
| 23. Spelling  |          |          |          |          |              |
| 24. Writing skills  |          |          |          |          |              |
| 25. List of references: at least three acceptable references (Wikipedia not recognized as an acceptable reference), appropriate citations |          |          |          |          |              |

**Total Score (0–70 points)** \_\_\_\_\_

# The City Narrative Rubric

Students write a narrative (maximum 500 words) describing their future city’s key features and design attributes. The purpose of the city narrative is to give the judges a quick overview of the future city’s infrastructure and its public services.

| 0  | 1   | 2  | 3  |
|--|---|--|--|
| <b>No Points</b><br>Requirements missing | <b>Poor</b><br>Poor-Fair quality. Fulfills less than 50% of requirements. | <b>Good</b><br>Average-Above average quality. Fulfills at least 90% of requirements. | <b>Excellent</b><br>Excellent quality. Fulfills 100% of requirements. Additional distinctive features. |

| I. DESCRIBE THE CITY (12 POINTS)   | 0                                      | 1   | 2                                       | 3  |
|--|--|---|---|--|
| <b>1. Basic City information</b><br><ul style="list-style-type: none"> <li>• Population, age</li> <li>• Location</li> </ul>  | No basic information.                  | Brief basic information.                  | Good basic information.                 | Complete basic information included.         |
| <b>2. City’s physical components &amp; infrastructure</b><br><ul style="list-style-type: none"> <li>• Landmarks</li> <li>• Parks &amp; recreation</li> <li>• Other highlights</li> </ul> | No description of physical components. | Brief description of physical components. | Good discussion of physical components. | Detailed description of physical components. |
| <b>3. City’s services</b><br><ul style="list-style-type: none"> <li>• Health, safety, education</li> <li>• Other quality of life issues</li> </ul>                                       | No description of city services.       | Brief description of city services.       | Good description of city services.      | Detailed description of city services.       |
| <b>4. Other unique attributes of the City</b>  | No unique attributes.                  | Brief description of unique attributes.   | Good description of unique attributes.  | Detailed description of unique attributes.   |
| II. WRITING SKILLS (8 POINTS)  | 0                                      | 1   | 2                                       | 3  |
| <b>5. Organization</b>   | Poorly organized.                      | Fair organization.                        | Good organization.                      |  |
| <b>6. Writing skills</b>   | Poorly written.                        | Fair writing skills.                      | Good writing skills.                    |  |
| <b>7. Grammar</b>  | Many grammatical errors.               | A few grammatical errors.                 | No grammatical errors.                  |  |
| <b>8. Spelling</b>   | Many spelling errors.                  | A few spelling errors.                    | No spelling errors.                     |  |

# City Narrative Score Sheet

## (0 to 20 points)

Directions: Check the appropriate box and then place score in right score column.

Judge's Name: \_\_\_\_\_

Future City Name: \_\_\_\_\_

School Name: \_\_\_\_\_

**0 No Points**  
Requirements missing

**1 Poor**  
Fulfills less than 50% of requirements.

**2 Good**  
Fulfills at least 90% of requirements.

**3 Excellent**  
Fulfills 100% of requirements. Additional distinctive features.

| I. DESCRIBE THE CITY (12 POINTS)   | 0 | 1 | 2 | 3 | SCORE |
|--|---|---|---|---|-------|
| 1. <b>Basic City information:</b> population, age, location  |   |   |   |   |       |
| 2. <b>City's physical components &amp; infrastructure:</b> landmarks, parks & recreation, other highlights |   |   |   |   |       |
| 3. <b>City's services:</b> health, safety, education; other quality of life issues                         |   |   |   |   |       |
| 4. <b>Other unique attributes of the City</b>  |   |   |   |   |       |
| II. WRITING SKILLS (8 POINTS)  | 0 | 1 | 2 | 3 | SCORE |
| 5. <b>Organization</b>   |   |   |   |   |       |
| 6. <b>Writing skills</b>   |   |   |   |   |       |
| 7. <b>Grammar</b>  |   |   |   |   |       |
| 8. <b>Spelling</b>   |   |   |   |   |       |

**Total Score (0–20 points)** \_\_\_\_\_

# The Physical Model Rubric

Students build a physical model of a section of their city using recycled materials that has at least one moving part. The model does not need to be an exact building-by-building duplication of the virtual design. Rather, the purpose of the model is to give a 3-dimensional, creative representation of an area that best represents the team’s vision of their future city.

| 0  | 2  | 4  | 6  | 8   | 10   |
|--|--|--|--|---|--|
| <b>No Points</b><br>Requirements missing | <b>Poor</b><br>Poor-Fair quality. Fulfills at least 20% of requirements. | <b>Fair</b><br>Fair-Average quality. Fulfills at least 50% of requirements | <b>Good</b><br>Average quality. Fulfills at least 90% of requirements. | <b>Very Good</b><br>Above average quality. Fulfills 100% of requirements. | <b>Excellent</b><br>Excellent quality. Fulfills 100% of requirements. Additional distinctive features. |

| I. CREATIVITY (20 POINTS)   | 0   | 2   | 4  | 6   | 8   | 10   |
|---|---|---|--|---|---|--|
| <b>1. Illustration of Futuristic Designs</b> <ul style="list-style-type: none"> <li>Buildings and/or structures</li> <li>Infrastructure (mag-lev, space elevator)</li> <li>Location (outer space, underwater, ice cap, desert)</li> <li>Plausible and recognizable as a city</li> </ul> | No futuristic designs that are plausible.           | Includes 1-2 futuristic designs that are plausible.                           | Includes few futuristic designs, 1-2 are plausible.                      | Several futuristic designs, few plausible.                                | Many futuristic designs, most plausible.  | Highly futuristic. Very plausible.   |
| <b>2. Appearance</b> <ul style="list-style-type: none"> <li>Use of color, graphics, shapes, etc.</li> <li>Realistic elements (flora, fauna, landscapes)</li> <li>Pleasing, not distracting</li> </ul>   | Not complimentary, distracting.                     | Fulfills at least 20% of requirements. Fair aesthetics, somewhat distracting. | Fulfills at least 50% of requirements. Fair aesthetics, not distracting. | Fulfills at least 90% of requirements. Good aesthetics enhance the model. | Very good aesthetics enhance the model.   | Excellent aesthetics enhance the model.  |
| II. QUALITY & SCALE (20 POINTS)   | 0   | 2   | 4  | 6   | 8   | 10   |
| <b>3. Quality Workmanship and Age Appropriateness</b> <ul style="list-style-type: none"> <li>Age appropriate for 6th, 7th, and 8th grades</li> <li>Quality construction</li> <li>Reasonably durable</li> </ul>  | Poor quality.                                       | Mediocre quality.   | Fair to good quality.  | Good quality. Age appropriate.  | Very good quality. Age appropriate.   | Excellent quality. Age appropriate.  |
| <b>4. Model Scale:</b> _____ <ul style="list-style-type: none"> <li>Appropriate scale chosen to create a good city model</li> <li>Consistent scale throughout model</li> <li>Applied horizontally and vertically</li> </ul>   | Inappropriate scale choice. Inconsistently applied. | Poor scale choice. Inconsistent scale for majority of model.                  | Fair scale choice. Some inconsistencies.                                 | Good scale choice. Consistently applied over majority of model.           | Very good scale choice. City elements easy to identify. Consistent application. | Exceptional scale choice. City elements very easy to identify. Consistent application across entire model. |

# Physical Model Rubric

**0**  
**No Points**  
Requirements missing

**2**  
**Poor**  
Poor-Fair quality. Fulfills at least 20% of requirements.

**4**  
**Fair**  
Fair-Average quality. Fulfills at least 50% of requirements

**6**  
**Good**  
Average quality. Fulfills at least 90% of requirements.

**8**  
**Very Good**  
Above average quality. Fulfills 100% of requirements.

**10**  
**Excellent**  
Excellent quality. Fulfills 100% of requirements. Additional distinctive features.

| III. CITY DESIGN (50 POINTS)   | 0   | 2   | 4   | 6   | 8   | 10   |
|--|---|---|---|---|---|--|
| <b>5. City Design and Livability</b> <ul style="list-style-type: none"> <li>Well planned design and layout (neighborhoods, green spaces, streets)</li> <li>Accessibility, functionality, mixed-use</li> <li>Eco-management: sustainability, landscape conservation</li> </ul>                                      | Fails to include expected requirements.           | Little planning.  | Some planning.  | Planned design, accessible, mixed-use. Considers environment.   | Well planned design. Accessible and mixed-use areas. Considers environment.               | Excellent planning, accessibility, and environmental management.   |
| <b>6. Zones &amp; Interconnectivity</b> <ul style="list-style-type: none"> <li>Variety of city zones, structures, infrastructure components</li> <li>Interconnectivity of zones and components</li> <li>Transportation: pedestrian, personal, public, goods &amp; services</li> </ul>                              | Zoning unclear.                                   | One zone, few structures. Little inter-connectivity.  | At least one zone, small variety of structures. Some inter-connectivity. Some awkward design. | 1-2 zones, some variety of structures. Adequate inter-connectivity.   | Two or more zones. Good variety of structures. Good inter-connectivity.                   | Two or more zones, very good variety of structures. Very good inter-connectivity.                                      |
| <b>7. Futuristic Technologies</b> <ul style="list-style-type: none"> <li>Examples of futuristic technologies, components</li> <li>Scientifically sound</li> </ul>  | No futuristic examples.                           | 1-2 futuristic examples. None scientifically sound.   | Few futuristic examples. At least one scientifically sound.                                   | Some futuristic examples. 2-3 are scientifically sound.   | Several futuristic examples, many of which are scientifically sound.                      | Highly futuristic, and based on sound scientific principles.   |
| <b>8. Innovative Solutions</b> <ul style="list-style-type: none"> <li>Examples of solutions to problems: transportation, environment, services, etc.</li> <li>At least one original, innovative solution</li> </ul>  | No solutions.                                     | One solution. Not innovative.   | One solution. Somewhat innovative.  | More than one solution. Somewhat innovative and plausible.  | More than one solution. Innovative and plausible.   | Several innovative and plausible solutions.  |
| <b>9. Essay Topic: Alternative Energy / Electrical Infrastructure</b> <ul style="list-style-type: none"> <li>Incorporating essay topic into model</li> <li>Alternative energy source for city's electrical infrastructure that does not deplete natural resources and has limited environmental impact.</li> </ul> | No examples of any part of the electrical system. | Small portion of the electrical power system shown. Poor illustration of alternative energy source. | Some of the electrical system illustrated and the alternative energy source.                  | Good overall illustration of an alternative energy source and the electrical system/ infrastructure. Could be more comprehensive. | Very good overall illustration of alternative energy source and city's electrical system. | Excellent illustration and overall solution for an alternative energy source for the city's electrical infrastructure. |

# Physical Model Rubric

|  |  |  |  |   |   |
|--|--|--|--|---|---|
| <b>0</b><br><b>No Points</b><br>Requirements missing | <b>2</b><br><b>Poor</b><br>Poor-Fair quality. Fulfills at least 20% of requirements. | <b>4</b><br><b>Fair</b><br>Fair-Average quality. Fulfills at least 50% of requirements | <b>6</b><br><b>Good</b><br>Average quality. Fulfills at least 90% of requirements. | <b>8</b><br><b>Very Good</b><br>Above average quality. Fulfills 100% of requirements. | <b>10</b><br><b>Excellent</b><br>Excellent quality. Fulfills 100% of requirements. Additional distinctive features. |
|--|--|--|--|---|---|

| <b>IV. MOVING PART(S) COMPONENT (20 POINTS)</b>  | <b>0</b>                    | <b>2</b>  | <b>4</b>   | <b>6</b>  | <b>8</b>   | <b>10</b>   |
|--|-----------------------------|---|--|---|--|---|
| <b>10. Moving Part(s) Innovation and Quality</b> <ul style="list-style-type: none"> <li>At least one moving part</li> <li>Quality workmanship, durability</li> <li>Repeatability of movement</li> <li>Innovative execution</li> </ul>                        | No moving parts.            | One moving part. Fair quality. One time movement.                   | One moving part. Good quality. Little innovation.                                    | At least one moving part. Good quality. Repeatable movement. Somewhat innovative. | More than one moving part. Very good quality. Repeatable movement. Innovative.   | More than one moving part. Excellent quality. Repeatable movement. Highly innovative. |
| <b>11. Moving Part(s) Relationship to the Design or Function of the City</b> <ul style="list-style-type: none"> <li>At least one moving part</li> <li>Closely related to function of the city</li> </ul>   | No moving parts.            | Moving part cosmetic; not relevant to city design.                  | Moving part loosely related to city design.  | Moving part closely related to city design.                                       | At least one moving part essential to city design.                               | More than one moving part essential to city design.                                   |
| <b>V. USE OF RECYCLED MATERIALS (10 POINTS)</b>  | <b>0</b>                    | <b>2</b>  | <b>4</b>   | <b>6</b>  | <b>8</b>   | <b>10</b>   |
| <b>12. Use of Recycled Materials</b> <ul style="list-style-type: none"> <li>Most of model made from recycled materials</li> <li>Variety of materials, imaginative or unusual materials</li> <li>Creative modification or application of materials</li> </ul> | No recycled materials used. | Few recycled materials. Not creative. No variety. No modifications. | At least 50% recycled materials. Little creativity, variety. Some attempt to modify. | More than 75% recycled. Some variety. Some creatively modified.                   | More than 75% recycled. Good variety. Many creative materials and modifications. | Almost all recycled. Exceptionally varied and creatively modified materials.          |

# Physical Model Score Sheet

(0 to 120 points)

Directions: Check the appropriate box and then place score in right score column.

Judge's Name: \_\_\_\_\_

Future City Name: \_\_\_\_\_

School Name: \_\_\_\_\_

|  |   |  |   |   |   |
|--|---|--|---|---|---|
| <b>0 No Points</b><br>Requirements missing | <b>2 Poor</b><br>Fulfills at least 20% of requirements. | <b>4 Fair</b><br>Fulfills at least 50% of requirements | <b>6 Good</b><br>Fulfills at least 90% of requirements. | <b>8 Very Good</b><br>Fulfills 100% of requirements | <b>10 Excellent</b><br>Fulfills 100% of requirements. Additional distinctive features |
|--|---|--|---|---|---|

| <b>I. CREATIVITY (20 POINTS)</b>   | <b>0</b> | <b>2</b> | <b>4</b> | <b>6</b> | <b>8</b> | <b>10</b> | <b>SCORE</b>  |
|--|----------|----------|----------|----------|----------|-----------|---------------|
| <b>1. Illustration of Futuristic Designs:</b> buildings/structures; infrastructure; Location; plausible /recognizable as a city  |          |          |          |          |          |           |               |
| <b>2. Appearance:</b> use of color, graphics, shapes, etc., realistic elements; pleasing, not distracting  |          |          |          |          |          |           |               |
| <b>II. QUALITY &amp; SCALE (20 POINTS)</b>   | <b>0</b> | <b>2</b> | <b>4</b> | <b>6</b> | <b>8</b> | <b>10</b> | <b>SCORE</b>  |
| <b>3. Quality Workmanship and Age Appropriateness:</b> age appropriate for 6th, 7th, and 8th grades, quality construction, reasonably durable  |          |          |          |          |          |           |               |
| <b>4. Model Scale:</b> _____, appropriate scale chosen, consistent scale throughout model, Applied horizontally and vertically   |          |          |          |          |          |           |               |
| <b>III. CITY DESIGN (50 POINTS)</b>  | <b>0</b> | <b>2</b> | <b>4</b> | <b>6</b> | <b>8</b> | <b>10</b> | <b>SCORE</b>  |
| <b>5. City Design and Livability:</b> well planned design and layout, accessibility; functionality; mixed-use; eco-management: sustainability, landscape conservation  |          |          |          |          |          |           |               |
| <b>6. Zones &amp; Interconnectivity:</b> variety of zones, structures, infrastructure components; interconnectivity of zones and components; transportation: pedestrian, personal, public, goods & services  |          |          |          |          |          |           |               |
| <b>7. Futuristic Technologies:</b> Ex. of futuristic technologies, components; scientifically sound  |          |          |          |          |          |           |               |
| <b>8. Innovative Solutions:</b> Ex. of solutions to problems: transportation, environment, services, etc.; at least one original, innovative solution  |          |          |          |          |          |           |               |
| <b>9. Essay Topic: Alternative Energy / Electrical Infrastructure:</b> Incorporates essay topic into model; Alternative energy source for city's electrical infrastructure that does not deplete natural resources and has limited environmental impact. |          |          |          |          |          |           |               |
| <b>IV. MOVING PART(S) COMPONENT (20 POINTS)</b>  | <b>0</b> | <b>2</b> | <b>4</b> | <b>6</b> | <b>8</b> | <b>10</b> | <b>SCORE</b>  |
| <b>10. Moving Part(s) Innovation and Quality:</b> at least 1 moving part, quality workmanship; durability, repeatability, innovative execution   |          |          |          |          |          |           |               |
| <b>11. Moving Part(s) Relationship to the Design or Function of the City:</b> at least 1 moving part, closely related to function of the city  |          |          |          |          |          |           |               |
| <b>V. USE OF RECYCLED MATERIALS (10 POINTS)</b>  | <b>0</b> | <b>2</b> | <b>4</b> | <b>6</b> | <b>8</b> | <b>10</b> | <b>SCORES</b> |
| <b>12. Use of Recycled Materials:</b> most of model made from recycled materials, variety of materials, imaginative or unusual materials, creative modification or application of materials  |          |          |          |          |          |           |               |

**Total Score (0–120 points)** \_\_\_\_\_

# Team Presentation Rubric

Students give a 7 minute presentation discussing features of their future city followed by a 5 - 8 minute question and answer period from the judges (overall time will not exceed 15 minutes). Be sure to check with your Regional Coordinator for exact competition times.

## Mandatory Questions

You will be provided a set of mandatory questions to ask during the competition. You are free to add additional questions AFTER all of the mandatory questions have been answered.

|  |  |  |  |   |   |
|--|--|--|--|---|---|
| <b>0</b><br><b>No Points</b><br>Requirements missing | <b>2</b><br><b>Poor</b><br>Poor-Fair quality. Fulfills at least 20% of requirements. | <b>4</b><br><b>Fair</b><br>Fair-Average quality. Fulfills at least 50% of requirements | <b>6</b><br><b>Good</b><br>Average quality. Fulfills at least 90% of requirements. | <b>8</b><br><b>Very Good</b><br>Above average quality. Fulfills 100% of requirements. | <b>10</b><br><b>Excellent</b><br>Excellent quality. Fulfills 100% of requirements. Additional distinctive features. |
|--|--|--|--|---|---|

| I. KNOWLEDGE (50 POINTS)  | 0   | 2  | 4   | 6   | 8  | 10   |
|---|---|--|---|---|--|--|
| <b>1. Organization</b> <ul style="list-style-type: none"> <li>Major elements: Intro, body, and conclusion</li> <li>Transitions between elements</li> <li>Logical</li> <li>Supporting information (definitions, examples, statistics, quotes, etc.)</li> </ul>   | Poor organization. No transitions. Missing major elements. No supporting information. | Poor organization. Missing a major element. Little support. Few transitions.                     | Fair organization. Contains most major elements. Some supporting information. Some transitions.                         | Several futuristic designs. Few plausible.  | Many futuristic designs. Most plausible.   | Highly futuristic. Very plausible.   |
| <b>2. Presentation Content</b> <ul style="list-style-type: none"> <li>City features, benefits, and aesthetics</li> <li>Geography, demographics or distinctive characteristics</li> <li>Infrastructure (e.g., transportation, energy, waste disposal or pollution control)</li> <li>Innovations in technology and futuristic concepts</li> </ul> | No city features, geography, infrastructure or innovation mentioned.                  | Includes a few of the required elements. Poorly discussed. Little explanation or not believable. | Fair description of the city. A few distinctive benefits and innovations explained. Somewhat futuristic and believable. | Good overall description of the city. Several distinctive benefits explained. Some innovations. Somewhat futuristic and believable.                                       | Very good description of city. Many benefits and innovations explained. Futuristic and believable.   | Excellent and detailed description of city. Effective description of benefits and high degree of innovation. Futuristic and believable.        |
| <b>3. Essay Topic (alternative energy)</b> <ul style="list-style-type: none"> <li>Discusses essay topic: energy source for generating electricity that does not deplete natural resources and has limited environmental impact</li> <li>Explains how the yearly theme influenced the city design or development</li> </ul>                      | No discussion of electric infrastructure.   | Refers to essay topic briefly. Inadequate solution.  | Briefly discusses essay topic and solution. No real supporting facts. Explains how their design incorporates the theme. | Discusses the essay topic and solution. Some supporting facts. Solution is adequate, somewhat innovative. Somewhat explains how their city design incorporates the theme. | Discusses the essay topic and solution. Good supporting facts. Solution innovative or futuristic. Fully explains how their city design incorporates the theme. | Discusses the essay topic and solution with excellent supporting facts. Excellent explanation of how their city design incorporates the theme. |

# Team Presentation Rubric

**0**  
**No Points**  
Requirements missing

**2**  
**Poor**  
Poor-Fair quality. Fulfills at least 20% of requirements.

**4**  
**Fair**  
Fair-Average quality. Fulfills at least 50% of requirements

**6**  
**Good**  
Average quality. Fulfills at least 90% of requirements.

**8**  
**Very Good**  
Above average quality. Fulfills 100% of requirements.

**10**  
**Excellent**  
Excellent quality. Fulfills 100% of requirements. Additional distinctive features.

| <b>I. KNOWLEDGE (CONTINUED)</b>  | <b>0</b>   | <b>2</b>   | <b>4</b>  | <b>6</b>  | <b>8</b>   | <b>10</b>   |
|--|--|--|---|---|--|---|
| <p><b>4. Knowledge of Engineering Roles &amp; Design Process</b></p> <ul style="list-style-type: none"> <li>• Discusses the engineering field and/or engineering roles</li> <li>• Demonstrates knowledge of engineering design process: problem definition, tradeoffs, testing, etc.</li> <li>• Has applied engineering process to FC project</li> </ul>   | No discussion of engineering.  | Mentions engineering, but lacks understanding of roles or design process.                                | Briefly discusses and understands engineering and role of engineer. Little discussion of engineering process. No link to project. | Discusses and understands engineering role. Presents some knowledge of engineering process, but no link to FC project.  | Good understanding of engineering role. Attempts to explain engineering process as related to part of the project.             | Excellent understanding of engineering and engineering process. Applies engineering process throughout the project.                   |
| <p><b>5. Questions and Answers</b></p> <ul style="list-style-type: none"> <li>• Answers questions with confidence</li> <li>• Accurate, complete answers</li> </ul>   | Unable to answer questions.  | Answers a few questions accurately. No supporting facts.   | Answers at least 50% of the questions accurately. Few supporting facts.   | Answers 90% of questions with accuracy and some supporting facts.   | Answers 100% of the questions accurately with some supporting detail.  | Fully, accurately, and confidently answers all questions with many supporting details.  |
| <b>II. DELIVERY/PRESENTATION SKILLS (30 POINTS)</b>  | <b>0</b>   | <b>2</b>   | <b>4</b>  | <b>6</b>  | <b>8</b>   | <b>10</b>   |
| <p><b>6. Presentation Skills</b></p> <ul style="list-style-type: none"> <li>• Verbal skills: Fluent, clear, audible delivery</li> <li>• Verbal skills: Correct grammar and appropriate language use</li> <li>• Non-verbal skills: Upright posture with practiced use of visual aids</li> <li>• Overall confident, direct, and animated delivery</li> </ul> | Poor skills throughout the presentation. All students need improvement in all areas. | A few verbal and nonverbal skills are fairly well done but needs more practice to improve in most areas. | Fair to good skills for the majority of the presenters.   | Good verbal and nonverbal skills for most presenters. Somewhat confident and direct.                                    | Very good verbal and nonverbal skills by most of presenters throughout majority of the presentation.                           | Excellent verbal and nonverbal skills by all presenters throughout the presentation. Very confident, direct, and animated delivery.   |
| <p><b>7. Model as a Demonstration Aid</b></p> <ul style="list-style-type: none"> <li>• Model is a key element of entire delivery</li> <li>• Creatively uses model to illustrate city features</li> <li>• Model enhances, rather than distracts, from presentation</li> </ul>   | Little or no use of the model as a demonstration aid.                                | Model referenced but does not enhance presentation.  | Model is used and is partially effective at illustrating features. Fairly enhances presentation. Little innovation shown.         | Good use of the model as an illustration of city design and function. Little creativity or illustration of innovations. | Very good model use; integrated smoothly into the presentation and helped to illustrate city design, function and innovations. | Extremely creative, integrated use of model; contributed significantly to the understanding of city design, function and innovations. |

# Team Presentation Rubric

**0**  
**No Points**  
Requirements missing

**2**  
**Poor**  
Poor-Fair quality. Fulfills at least 20% of requirements.

**4**  
**Fair**  
Fair-Average quality. Fulfills at least 50% of requirements

**6**  
**Good**  
Average quality. Fulfills at least 90% of requirements.

**8**  
**Very Good**  
Above average quality. Fulfills 100% of requirements.

**10**  
**Excellent**  
Excellent quality. Fulfills 100% of requirements. Additional distinctive features.

| II. DELIVERY/PRESENTATION SKILLS (CONTINUED)   | 0   | 2   | 4   | 6  | 8   | 10  |
|--|---|---|---|--|---|---|
| <p><b>8. Visual and Other Aids</b></p> <ul style="list-style-type: none"> <li>• Visual aids (posters, charts) neat, well-prepared</li> <li>• Additional demonstration aids, if used (props, costumes, handouts, etc.) enhance, rather than distract, from presentation</li> <li>• Delivery with all visual aids is well practiced and confident</li> </ul> | No use of visual aids or visual (or other demonstration) aids distract from presentation. | Few visual aids. Poorly designed. Poorly used in presentation.  | Fairly well designed visual aids. Fairly well used to enhance presentation.   | Good design of visual aids that generally added to presentation. Could be used more effectively.   | Many well-designed visual aids. Could be more creative. Well used to enhance the presentation.  | Many well designed, constructed and creative visual aids that integrated well into the presentation. Effective use in delivery.   |
| III. TEAMWORK (10 POINTS)  | 0   | 2   | 4   | 6  | 8   | 10  |
| <p><b>9. Teamwork During Presentation and Q&amp;A</b></p> <ul style="list-style-type: none"> <li>• Team members supported each other</li> <li>• Team members shared time equally</li> <li>• Team members displayed an equal amount of knowledge</li> <li>• Full complement of team members (three students)</li> </ul>                                     | Little or no collaboration or support among team members.                                 | A small amount of collaboration among team members but more support of one another is needed. One or two tend to dominate during both presentation and Q&A. | Some collaboration, some support and sharing among some team members. Amount of knowledge appears unequal. One or two tend to dominate during either the presentation or Q&A. | Good collaboration; support and sharing among most members. Full complement of three team members. Some team members have more knowledge and dominate. | Very good collaboration, support and sharing among the team members on both Q & A and presentation. Equivalent knowledge level for most of team. Full complement of three team members. | Excellent collaboration, support and sharing among all of the team members throughout. Equivalent knowledge level for all. Full complement of three team members. No one dominates. |

# Team Presentation Score Sheet

## (0 to 90 points)

Judge's Name: \_\_\_\_\_

Future City Name: \_\_\_\_\_

School Name: \_\_\_\_\_

**Directions: Check the appropriate box and then place score in right score column.**

|  |   |  |   |   |   |
|--|---|--|---|---|---|
| <b>0 No Points</b><br>Requirements missing | <b>2 Poor</b><br>Fulfills at least 20% of requirements. | <b>4 Fair</b><br>Fulfills at least 50% of requirements | <b>6 Good</b><br>Fulfills at least 90% of requirements. | <b>8 Very Good</b><br>Fulfills 100% of requirements | <b>10 Excellent</b><br>Fulfills 100% of requirements. Additional distinctive features |
|--|---|--|---|---|---|

| <b>I. KNOWLEDGE (50 POINTS)</b>  | <b>0</b> | <b>2</b> | <b>4</b> | <b>6</b> | <b>8</b> | <b>10</b> | <b>SCORE</b> |
|--|----------|----------|----------|----------|----------|-----------|--------------|
| <b>1. Organization:</b> major elements: Intro, body, and conclusion; transitions between elements; logical, supporting information   |          |          |          |          |          |           |              |
| <b>2. Presentation Content:</b> city features, benefits, and aesthetics; geography, demographics or distinctive characteristics; infrastructure; innovations in technology and futuristic concepts   |          |          |          |          |          |           |              |
| <b>3. Essay Topic (alternative energy):</b> discusses essay topic: energy source for generating electricity that does not deplete natural resources and has limited environmental impact; explains how the yearly theme influenced the city design or development  |          |          |          |          |          |           |              |
| <b>4. Knowledge of Engineering Roles &amp; Design Process:</b> discusses the engineering field and/or engineering roles, demonstrates knowledge of engineering design process; has applied engineering process to FC project                                       |          |          |          |          |          |           |              |
| <b>5. Questions and Answers:</b> answers questions with confidence; accurate, complete answers   |          |          |          |          |          |           |              |
| <b>II. DELIVERY/PRESENTATION SKILLS (30 POINTS)</b>  | <b>0</b> | <b>2</b> | <b>4</b> | <b>6</b> | <b>8</b> | <b>10</b> | <b>SCORE</b> |
| <b>6. Presentation Skills:</b> Verbal skills: Fluent, clear, audible delivery; verbal skills: Correct grammar and appropriate language use; Non-verbal skills: Upright posture with practiced use of visual aids; Overall confident, direct, and animated delivery |          |          |          |          |          |           |              |
| <b>7. Model as a Demonstration Aid:</b> model is a key element of entire delivery; creatively uses model to illustrate city features; model enhances, rather than distracts, from presentation   |          |          |          |          |          |           |              |
| <b>8. Visual and Other Aids:</b> visual aids neat, well-prepared; additional demonstration aids, if used enhance, rather than distract, from presentation; delivery with all visual aids is well practiced and confident   |          |          |          |          |          |           |              |
| <b>III. TEAMWORK (10 POINTS)</b>   | <b>0</b> | <b>2</b> | <b>4</b> | <b>6</b> | <b>8</b> | <b>10</b> | <b>SCORE</b> |
| <b>9. Teamwork During Presentation and Q&amp;A:</b> team members supported each other; team members shared time equally; team members displayed an equal amount of knowledge; full complement of team members (three students)                                     |          |          |          |          |          |           |              |

**Total Score (0–90 points)** \_\_\_\_\_

# Model and Presentation Scoring Deduction Form

Judge's Name: \_\_\_\_\_

Future City Name: \_\_\_\_\_

School Name: \_\_\_\_\_

Time: \_\_\_\_\_

| Criteria  | Possible Deductions  | Total Deductions | Comments |
|---|--|------------------|----------|
| <p><b>Model and Presentation Costs exceed \$100</b><br/>Do they list all of the materials used in the physical models and presentation props? Are:</p> <ul style="list-style-type: none"> <li>• Donated or borrowed materials listed at a fair market value?</li> <li>• Large or expensive used items listed at a fair market value?</li> <li>• Recycled items listed at \$0.00?</li> <li>• School uniform, street clothes, competition T-shirt, easels listed at \$0.00?</li> </ul>  | 15 points  |                  |          |
| <p><b>Missing Competition Expense Form</b></p>  | 15 points  |                  |          |
| <p><b>Competition Expense Form is incomplete.</b></p> <ul style="list-style-type: none"> <li>• Not signed by teacher or mentor.</li> <li>• Major expense(s) not listed</li> <li>• Unfair market value</li> <li>• Missing receipts</li> </ul>  | 5 points   |                  |          |
| <p><b>Model ID 4 x 6 Card</b> Should contain:</p> <ul style="list-style-type: none"> <li>• Future City name</li> <li>• School name</li> <li>• Information on the scale used</li> <li>• Student team members' names</li> <li>• Teacher and mentor names</li> </ul>   | 5 pts for missing card Or 1 point for any individual missing information (up to 5 points). |                  |          |
| <p><b>Model Size</b><br/>Exceeding maximum dimensions in any direction at any time during the competition (includes all supporting structures, doors, drawers &amp; materials hanging below the table top):</p> <ul style="list-style-type: none"> <li>• 25 inches (width)</li> <li>• 50 inches (length)</li> <li>• 20 inches (height)</li> <li>• 75 lbs weight limit (for National Finals only)</li> </ul>   | 15 points  |                  |          |
| <p><b>Presentation Materials Size</b><br/>Exceeding maximum dimensions – two options (either, but not both):</p> <ol style="list-style-type: none"> <li>1. Single display: 60 inches (width), 36 inches (height)</li> <li>2. Two displays (each): 30 inches (width), 36 inches (height) <ul style="list-style-type: none"> <li>• Dimensions do not include easels</li> <li>• Displays can include multiple display boards stacked on the easel, but not more than two displays in use at any one time</li> <li>• Additional demonstration aids (pointers, brochures, handouts, props, etc.) collectively must fit within a 12x6x6" volume (e.g. a shoe box).</li> <li>• The maximum weight for the model and all supporting materials is 75 lbs.</li> </ul> </li> </ol> | 15 points  |                  |          |
| <p><b>Presentation Time</b><br/>Formal presentation is 5-7 minutes followed by Q&amp;A, total not exceeding 15 minutes.</p>   | 5 points   |                  |          |
| <p><b>Unsportsmanlike conduct</b><br/>Rude behavior or disruption of judging by any team member or guests.</p>  | 20 points  |                  |          |
| <p><b>Destruction of another team's model or presentation materials</b></p>   | Disqualified   |                  |          |

**Total Deductions** \_\_\_\_\_

# Scoring Deductions

| Penalty          | Item   | Description   |
|------------------|--|---|
| 5–10 pts.        | Missing deadline for submission of the Virtual City Design (SimCity) and Virtual City Benchmark Form (pg. 19). Deadline will be set by the Regional Coordinator. | The Virtual City Design and Virtual City Benchmark Form must be received in accordance with the deadlines set by the Regional Coordinator.  |
| 15 pts           | Pre-designed medium region.  | You must use the pre-designed medium region available for download from <a href="http://www.futurecity.org">www.futurecity.org</a> .  |
| 2 pts.           | Virtual City Benchmark Form is incomplete.   | A properly filled out Virtual City Benchmark Form must be submitted with the Virtual City Design.   |
| 5 pts.           | Missing deadline for submission of the Essay. Deadline will be set by the Regional Coordinator.  | The Essay must be received in accordance with the deadlines set by the Regional Coordinator.  |
| 2 pts.           | Essay Form is incomplete or missing.   | A properly filled out Essay Form must be attached to the Essay. Follow instructions on the form.  |
| 10 pts           | Exceeding Essay Word Count.  | Maximum of 1000 words.  |
| 5 pts.           | Missing deadline for submission of the City Narrative. Deadline will be set by the Regional Coordinator.   | The City Narrative must be received in accordance with the deadlines set by the Regional Coordinator.   |
| 2 pts.           | City Narrative Form is incomplete or missing.  | A properly filled out City Narrative Form must be attached to the City Narrative. Follow instructions on the form.  |
| 2 pts            | Exceeding Narrative Word Count.  | Maximum of 500 words  |
| 15 pts.          | Exceeding Physical Model dimensions.   | The maximum dimensions of the model are 20" (H) x 50" (L) x 25" (W). Height and width dimensions include all supporting structures, such as braces, and any model materials hanging below the tabletop.   |
| 15 pts.          | Competition Expense Form is missing.   | The Competition Expense Form, with receipts attached to the back, must be brought to the competition.   |
| 5 pts.           | Receipts missing from back of Competition Expense Form.  | Receipts must be attached to the back of the Competition Expense Form. Follow instructions on the form.   |
| 15 pts.          | Exceeding the \$100 limit on the physical model and presentation materials.  | The total value of the materials used in the model, as well as those used in support of the presentation and for special awards (including visual aids, costumes, color copying/printing, and other demonstration aids) may not exceed \$100.     |
| 1–5pts.          | Missing all or part of the Model ID card.  | The Model ID card should be identified by a 4" x 6" index card with: future city name, organization name, team members' names (3 students, educator, engineer mentor), and scale used.  |
| 5 pts.           | Exceeding presentation time.   | Verbal presentation by team is 5-7 minutes. Presentation cannot exceed 7 minutes.   |
| 15 pts.          | Exceeding presentation dimensions.   | Support materials may consist of either:<br><b>1.</b> A single display not exceeding 60" (W) x 36" (H)<br><i>OR;</i><br><b>2.</b> Two displays not exceeding 30" (W) x 36" (H) each. (The size does not include the easel stand, if one is used.) |
| 2 points         | Missing Honor Statement  |   |
| 20 points        | Unsportsmanlike conduct  | Rude behavior or disruption of judging by any team member or guests   |
| Disqualification | Destruction of another team's model or presentation materials  |   |

# Future City Summary Score Sheet

Future City Name: \_\_\_\_\_

Organization Name: \_\_\_\_\_

Points Scored: \_\_\_\_\_

## Points Earned

- 1. Virtual City Benchmark Form (0 to 10 points) .....
- 2. Virtual City Design (0–90 points) .....
- 3. Research Essay (0–70 points) .....
- 4. City Narrative (0 to 20 points) .....
- 5. Physical Model (0 to 120 points) .....
- 6. Team Presentation (0 to 90 points) .....

## Scoring Deductions

### 1. Missing Submission Deadline

- Virtual City Benchmark Form (5 points) .....
- Virtual City Design (5 points) .....
- Research Essay (5 points) .....
- City Narrative (5 points) .....

### 2. Incomplete Forms

- Virtual City Benchmark Form (2 points) .....
- Research Essay Form (2 points) .....
- City Narrative Form (2 points) .....
- Competition Expense Form (5 points) .....

### 3. Missing Forms

- Research Essay Form (2 points) .....
- City Narrative Form (2 points) .....
- Competition Expense Form (15 points) .....
- Honor Statement Form (2 points) .....

- 4. Did not use pre-designed medium city (15 points) .....
- 5. Exceeded 1,000 word essay limit (10 points) .....
- 6. Exceeded 500 word City Narrative limit (2 points) .....
- 7. Missing all or part of the Model ID card information (1 to 5 points) .....
- 8. Exceeded Physical Model dimensions (15 points) .....
- 9. Exceeded \$100 budget (15 points) .....
- 10. Exceeded presentation time (5 points) .....
- 11. Exceeded presentation dimensions (15 points) .....
- 12. Unsportsmanlike conduct (20 points) .....

**Total Score (0 to 400 points)** \_\_\_\_\_

# Practice Questions

Judges will be given mandatory questions on competition day. Below are questions we provide to the teams for practice:

## Rubric Questions

1. What types of jobs are provided in your industrial and commercial zones?
2. What measures are taken in your city to provide for clean air?
3. Describe your park and recreational facilities. What futuristic features do they possess?
4. Why is city planning important?
5. How are children and adults educated in your city?
6. How is waste disposal managed in your city?
7. What futuristic freight transportation systems do you utilize in your city?
8. Explain how traffic and goods from your city's airport can easily be transported to their destinations.
9. Why did you choose the location of your city?
10. What modes of transportation are available to the citizens? Can a person reasonably travel throughout the city without the use of a car?
11. How do you generate electricity in your city?
12. Does your city have a unique source of energy derived from non-traditional sources?
13. How does your city's alternate energy source impact the environment?
14. Is your alternate energy source renewable and if so, how is it renewable?
15. How do you ensure power is available throughout the city?
16. What is your most unusual recycled material?
17. Why would an alternate energy source be needed in your city?
18. What measures were taken to create an attractive production center for the alternate energy source?
19. Describe the technology used to generate energy using your alternate source.
20. Are fossil fuels still needed as a source of energy in your city of the future? Why or Why not?

21. Explain the process you used in writing the essay.
22. Why would your city's infrastructure make someone want to live there?
23. How did you decide what information to include in the presentation?
24. How did you decide what visuals to use in your presentation?

## Budgeting and Incentives

1. How did you approach budgeting for growth in your city?
2. What does your future city have as an enticement to offer potential business investors?

## Resident Needs and Profile

1. How does your city help support a healthy lifestyle for its residents?
2. Why does your city need a diversity of people to run effectively?
3. Detail some of the features you have incorporated in your city design to provide access for people with disabilities?

## Engineering and Operations

1. What insight did you gain from your project on maintaining a balance between future planning and preservation of the past?
2. What measures have been taken to protect your city from natural disasters?
3. How does your city allow for growth?
4. Are there any real factors that limit the size of your city?
5. What made the communication system you selected the best choice for your city?
6. Overburden transportation systems are universally a problem for cities—what approach did you take to prevent this problem from happening in your city?
7. How do construction materials and goods efficiently and with minimal environmental impact reach a site in your city?

8. In planning for your city's utilities (water, garbage collection, waste management, recycling, etc.) what considerations were given to their efficiency and maintenance?
9. What was your biggest engineering design challenge in this project?

### **Building The Model**

1. In building the model of your city, what was the most difficult aspect to overcome?
2. What factors went into determining the scale of your model?
3. Why did you choose this particular section of your virtual city to build?
4. What were some of the factors that went into laying out the various zones in your city?
5. If you began again, what one thing would you have done differently to improve your model?

### **Benefits To Team Members**

1. Why would you encourage other students to participate in the Future City Competition?
2. How has the Future City Competition helped you plan for your future?
3. What is the most valuable experience you gained from the Future City Competition?

### **Benefits For Society**

1. From a global perspective how will humanity profit from your city?
2. Why do we need fresh and innovative ideas for cities?
3. What would be the benefits of having an engineer included on your city's Town Council?

### **Your Engineer-Mentor and Educator**

1. What insights did you gain from working with your engineer-mentor on the Future City Competition?
2. Name one activity that helped you the most?

# Future City Regional Coordinators

## **ALABAMA**

Sonya Dillard  
*NASA – Marshall Space  
Flight Center*

## **ARIZONA**

Michael Andrews  
*Andrews & Associates, LLC*

## **CALIFORNIA (NORTHERN)**

Lynda McGhie  
*Future City  
Northern California*

## **COLORADO**

Byron C. Gray  
*IBM Global Services*

## **FLORIDA (SOUTH)**

Dr. Osama Mohammed  
*Florida International University*

## **FLORIDA (TAMPA BAY)**

Cengiz H. Mumcuoglu  
*Skanska USA Building Inc.*

## **GEORGIA**

Dr. Dawn Ramsey  
*Southern Polytechnic State  
University*

## **IDAHO**

Lynn Olson, P.E.  
*Future City Idaho*

## **ILLINOIS (CHICAGO)**

Don Wittmer, P.E.  
*HNTB*

## **INDIANA**

Carol Dostal  
*Indiana University – Purdue  
University Fort Wayne*

## **IOWA**

Jean Oberbroeckling  
*Future City Iowa*

## **KANSAS (GREAT PLAINS)**

Jeff Sims  
*KDOT Bureau of Design*

## **KENTUCKY**

Joe Percefull  
*Future City Kentucky*

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The National Future City Staff would like to thank and acknowledge the dedication of our tireless Regional Coordinators and their committee members. The countless hours that they contribute as they answer every question (big and small), match mentors to schools, fundraise, and host wonderful Regional Competitions is the foundation on which Future City rests. Thank you!



To contact your Regional Coordinator visit [www.futurecity.org](http://www.futurecity.org) and click on *Find My Region*.

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