2021-2022 City Model Slideshow

School/Organization: Lionville Middle School

Educator Name: Guy Raines

Future City Team Name: Kaisana

Delete all PURPLE text before submitting the slideshow for judging. Keep text that is black.

Deliverable Details/Requirements

- This slideshow is your chance to present your model. Whether your team created a single model or multiple segments, here is where you show off the future city you designed to the judges.

- Choose photos of the various segment(s) that best show the requested content. Where noted, you can put one (1) or two (2) photographs of your team's work. The photos can take up as much space on the slide as you like, as long as they do not cover the slide title (upper left) or the text block descriptions on the right of the slide. More than two photographs are not permitted per slide. Collage images with more than two photos are not permitted.

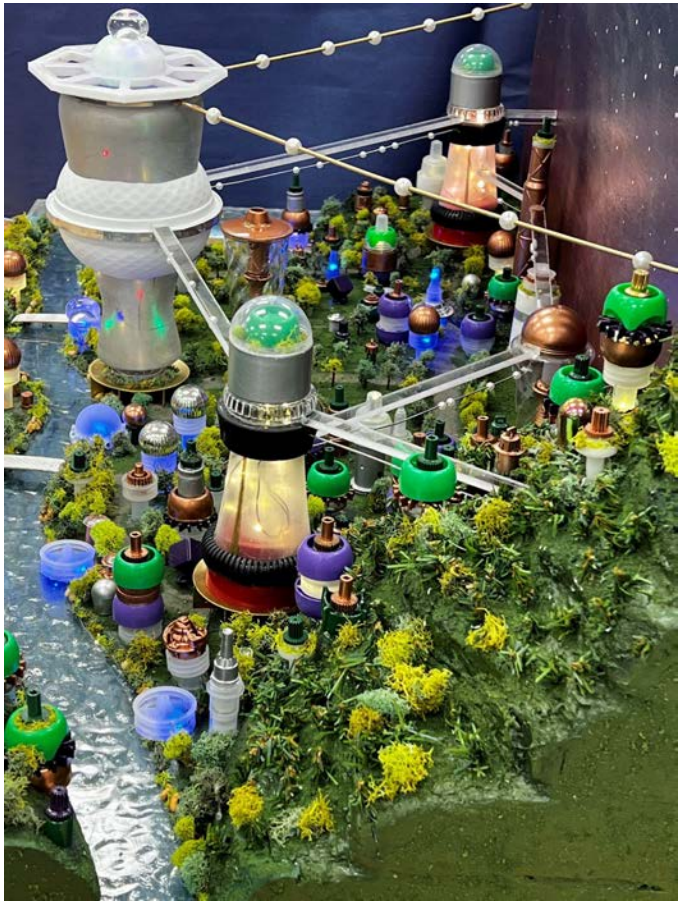
- Do not change the size of text boxes in this template. All written text must fit within the boxes and *cannot* be smaller than size 14 in Calibri (or equivalent) font.

- When finished, save the slideshow as a PDF and upload to the Educator Dashboard at FutureCity.org.

- Review the 2021-2022 Program Handbook for a full list of rules and requirements.

Section I

CITY DESIGN



Residential Zone

What is important for the judges to know about your residential zone?:

All residential buildings in our model are represented as copper. Two different building designs exist in this zone - solely residential buildings and CARE buildings. The first design is a building purely dedicated to housing citizens. The second design, CARE, includes a mixture of commercial, agricultural, residential, and educational zones all in one self sufficient building. These buildings were made to eliminate waste and reduce energy usage needed for transportation, as all daily needs are in the same location.

Commercial Zone

What is important for the judges to know about your commercial zone?:

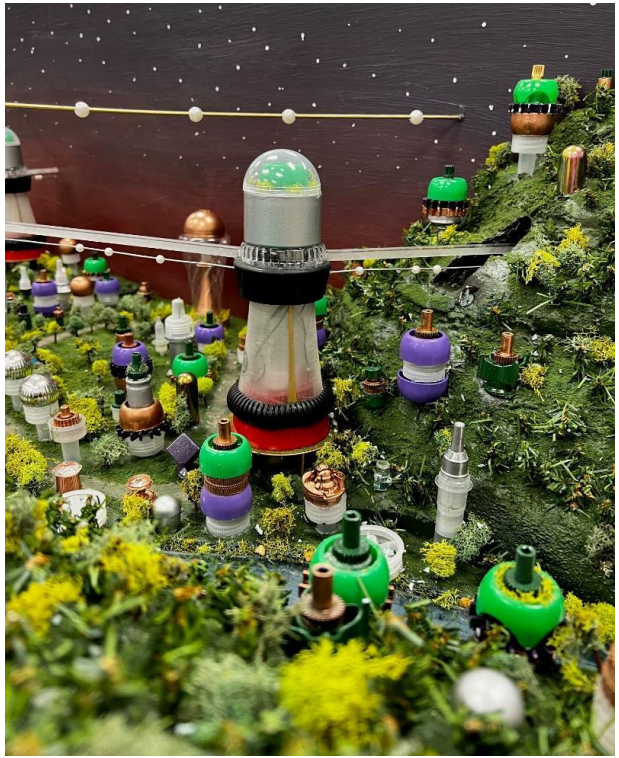
Commercial zones consist of clear buildings with lights and without. They come in a wide variety of shapes and sizes to represent the multitude of activities offered within these zones, such as shopping, dining, and recreation. Citizens spend most of their free time in these diverse commercial zones. They can be found all across the city, ensuring citizens can access them easily. Additionally, commercial buildings offer a wide of jobs to residents of Kaisana.

Industrial Zone

What is important for the judges to know about your industrial zone?:

Industrial zones/buildings are silver on our model. High tech industrial buildings exist in each community. These can stand by themselves or be found in multi-zoned areas.
Kaisana's functionality is highly dependant on industrial zones, as they are responsible for creating all of the products within the city. These include building materials, basic items (plates, furniture, containers, etc.), and technology.

Infrastructure Example 1



What type(s) of infrastructure are shown here (water, power, utilities, etc.)?:

The MyStation acts transportation and collection hub. It is made of 8 recyclable materials.

How are these related to the realities/challenges of a Waste-Free City?:

The MyStation is one of 6 buildings circling the KaiHub and acts as a central public building in each community. The function of the building is to collect and transport waste and products in need of refurbishing to the KaiHub. Small levels of refurbishment take place to keep products in use. PiezoPod stations are located in the building.

Infrastructure Example 2

What type(s) of infrastructure are shown here (water, power, utilities, etc.)?:

Our main utility center is the KaiHub. It is made of 7 recyclable materials.

How are these related to the realities/challenges of a Waste-Free City?:

The KaiHub manages Kaisana's waste through 4 of its 5 layers. The refurbishment layer repurposes products to be reused. The compost layer decomposes organic waste, such as food or feces. The wastewater layer uses a desalination process to turn saltwater into freshwater. The final layer houses mycelium, grown to replace plastic.

City Services Example 1

What type(s) of city services are shown here (health, education, etc.)?:

The city service shown here is a medical section located in the MyStation (represented by a red layer).

What do you want the judges to know about your city's operations?:

Kaisana's healthcare, KaiMed, is a free healthcare plan provided to all citizens. It includes nanobots, microscopic machines that can check vitals, run diagnostics, and perform minor surgeries. These nanobots effectively eliminate waste from medical procedures.

City Services Example 2

What type(s) of city services are shown here (health, education, etc.)?:

KaiEd/education is represented as purple on the model.

What do you want the judges to know about your city's operations?:

In Kaisana's education system, high school and college students are provided with virtual internships in various occupational fields. Secondary students are also provided an Enhancer, a neurochip that enhances their brain functions. Elementary schools are located in CARE buildings to limit travel for younger children.

Transportation Example 1

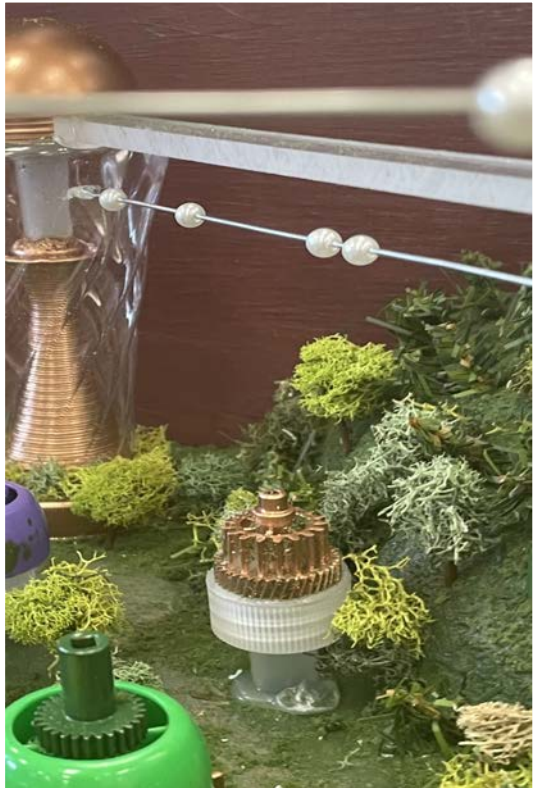
What type(s) of transportation systems are shown here?:

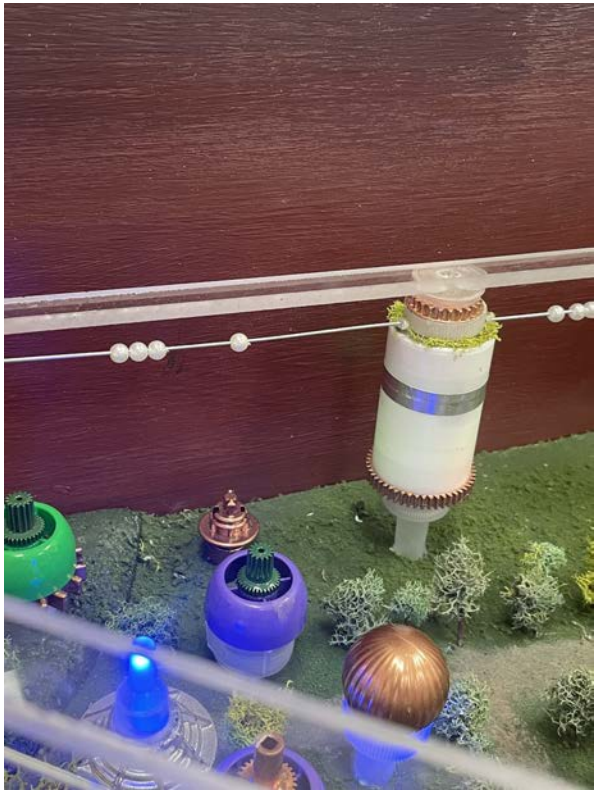
Maglev trains are Kaisana's form of long distance transportation. They are represented with gold dowel rods and pearl beads.

What do you want the judges to know about your transportation system(s)?:

Maglev trains are a high speed, long distance transportation made of bamboo, an aluminum replacement. They are used to transport people and goods between KaiHubs. Their lightweight design uses magnets to levitate and propel them with minimum energy. These trains have few mechanical breakdowns and create zero waste.

Transportation Example 2





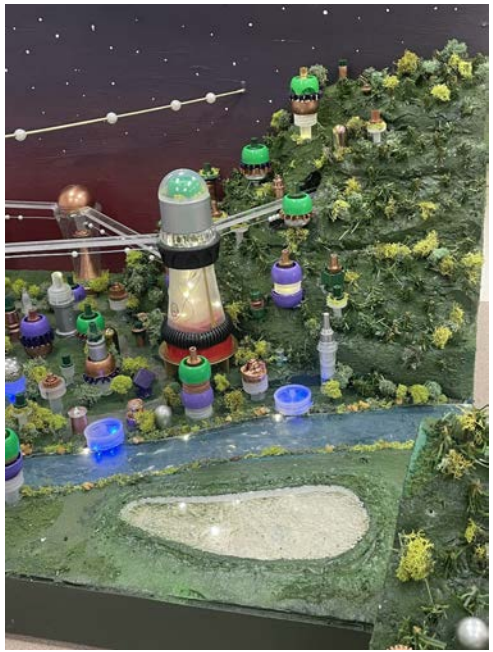
What type(s) of transportation systems are shown here?:

PiezoPods are Kaisana's short-distance transportation and are represented as silver rods and small pearl beads.

What do you want the judges to know about your transportation system(s)?:

PiezoPods are a short distance form of transportation used within Kaisana. They are similar to Maglev trains, but much smaller, as they were designed specifically for vulnerable citizens and those who require a private form of transportation. The pods are powered by the piezoelectricity generated by the PiezoPaths overhead.

Principles of a Circular Economy in Action - Example 1



What is important for the judges to know about this element of your circular economy solution?:

Mycelium, the strong root structure of the honey fungus, is an important contributor to designing out waste and pollution. It replaces countless non-biodegradable materials, such as containers, styrofoam, and insulation. Mycelium can also be reused or broken down into compost to grow more mycelium. Single-use plastic utensils are a thing of the past; now wooden forks and spoons are used along with mycelium plates for dining. Furniture made of mycelium is a great substitute for plastic and wood. Mycelium is represented here under the mountain.

Principles of a Circular Economy in Action - Example 2

What is important for the judges to know about this element of your circular economy solution?:

The main way Kaisana keeps materials stay in use is through the MyCycle. All products in the city are manufactured, distributed, purchased, and used throughout the city. When they are no longer needed they are sent to the second level of the Kaihub. There, they are refurbished or repurposed. This cycle ensures that all materials within the city are kept in use and products can have a longer lifespan. If they cannot be refurbished, they will be sent to be compost tumblers to decompose, so that no material is wasted.

Principles of a Circular Economy in Action - Example 3

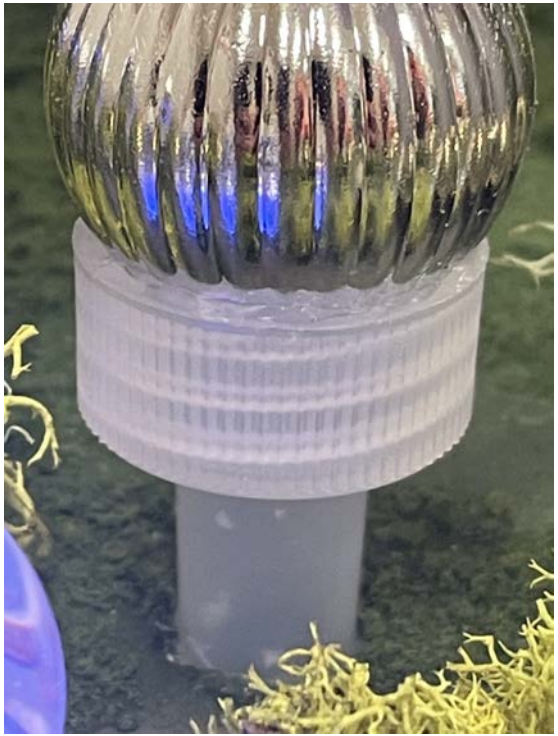
What is important for the judges to know about this element of your circular economy solution?:

One way Kaisana aims to regenerate natural systems is by replenishing the surrounding lakes and rivers. This is done through the city's water cycle, which consists of collecting water from the ocean and desalinating it to create usable freshwater. Once this freshwater is used throughout Kaisana, it is returned to the KaiHub, where fungal bacteria breaks down contaminants. The cleaned water is then introduced into nearby lakes and rivers, regenerating them after centuries of misuse. The water is represented by wavy plexiglass.

Section II

BUILD IT: QUALITY, SCALE, AND MATERIALS

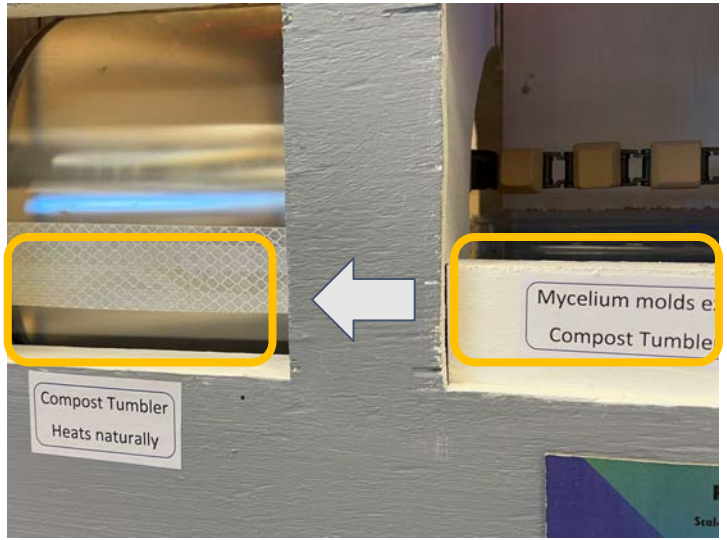
Innovative Material & Use Example 1



Choose a recycled or reused item and describe how you used it creatively in your model:

An innovative material used in the model was recycled air fresheners. The caps and interior parts were used in various ways throughout the city. Some of the buildings use the top of the component, while the others consist of the inside. It was a popular recycled material, so we incorporated it as much as we could. We collected them from many students and teachers. We used most of them to build our clear commercial buildings, making it possible to light them different colors.

Innovative Material & Use Example 2



Choose another recycled or reused item and describe how you used it creatively in your model:

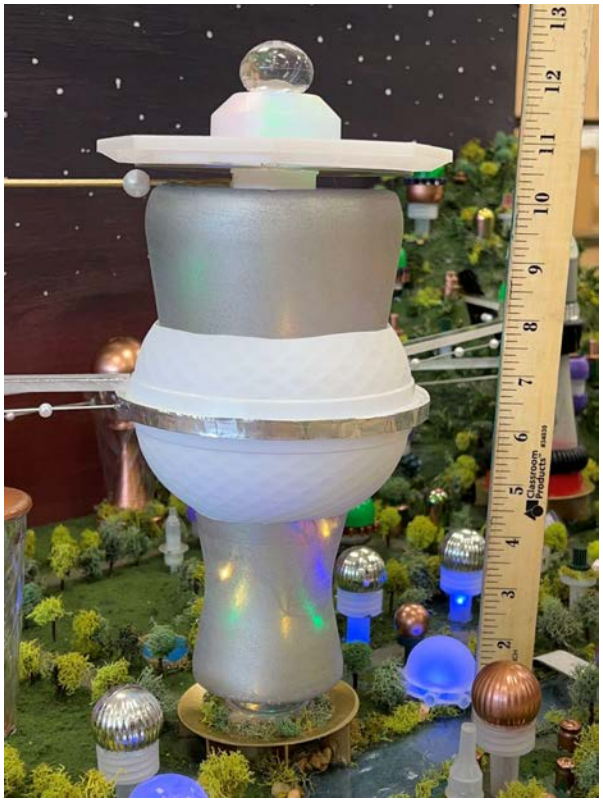
Another innovative part used in the model was a reflective screen from a flat screen TV. To create the moving part, we needed a material that was semi-transparent and resembled a compost tumbler. A member of the team had a broken television, so they brought the screen in to use for our moving part. The reflective surface looked good when the tumbler was rotating, and was transparent enough to see through it. The chain link passing through the tumbler is visible, which represents the mycelium entering to be heated.

Innovative Material & Use Example 3

Choose another recycled or reused item and describe how you used it creatively in your model:

Our third innovative material is applesauce pouch caps, which we used for our self-sufficient CARE buildings. The caps are 100% recyclable and were collected throughout the year. One of our presenters, Jamie, has a large collection of them because she eats at least two applesauce packets at lunch every day. These applesauce caps are recyclable, and they come in many different colors, so we were able to create zones accordingly.

Example of Scale



Scale used in model (e.g., 1”= 10’, or 1”=22’):
1”=100’

Structure 1

What type of structure is this?:
CARE Building

What size is the structure on the model?:
3 inches

What size would this structure be in real life?:
300 feet

Structure 2

What type of structure is this?:
The Kaihub

What size is the structure on the model?:
12.5 inches

What size would this structure be in real life?:
1,250 ft

Moving Part

- **Judges**: Watch and review the moving part video from this team in your Judge Dashboard.

Video Details:

- The video must be posted as to be publicly available for judges to access on either YouTube or Vimeo.
- Video cannot exceed 1 minute.
- Teams need to mention their city/team name in the video.
- Teams must show the moving part in action.
- In the video, share what role the part plays within the city and how your team built it.

Section III

JUDGE ASSESSMENT OF MODEL

Futuristic Technology Example 1

What is important for the judges to know about this example of technology?:

Citizens of Kaisana traverse over short distances on PiezoPaths. As pedestrians walk on the paths they create pressure and friction that generates energy in piezoelectric tiles within the paths. The energy created is used to power the PiezoPods, small vehicles located under the PiezoPaths, and smaller buildings, which are located along the PiezoPaths. The PiezoPaths provides a waste free, short distance form of transportation. Clean energy is created naturally as people go about their daily routines. The PiezoPaths are represented by recycled plexiglass.

Futuristic Technology Example 2

What is important for the judges to know about this example of technology?:

Kaisana's futuristic energy source is Space-Based Solar Power. Satellite units containing mirror-like reflectors concentrate sunlight onto an array of solar panels in space.These panels generate energy, which is then turned into microwaves. A transmitter sends the microwaves to Earth, where they are received by the rectenna. Space-Based Solar Power generates gigawatts of power and creates zero waste, making it the perfect energy source for Kaisana. The rectenna is pictured here and featured on the back of the model to signify its distant from the city because of its large size.