2020-2021 City Model Slideshow

School/Organization: **Downingtown Middle School**

Educator Name: **Mr. Derek Mastrangelo**

Future City Team Name: **Selene**

Deliverable Details

- 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.
- 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 Online Portal at FutureCity.org.

Section I
CITY DESIGN

Residential Zone

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

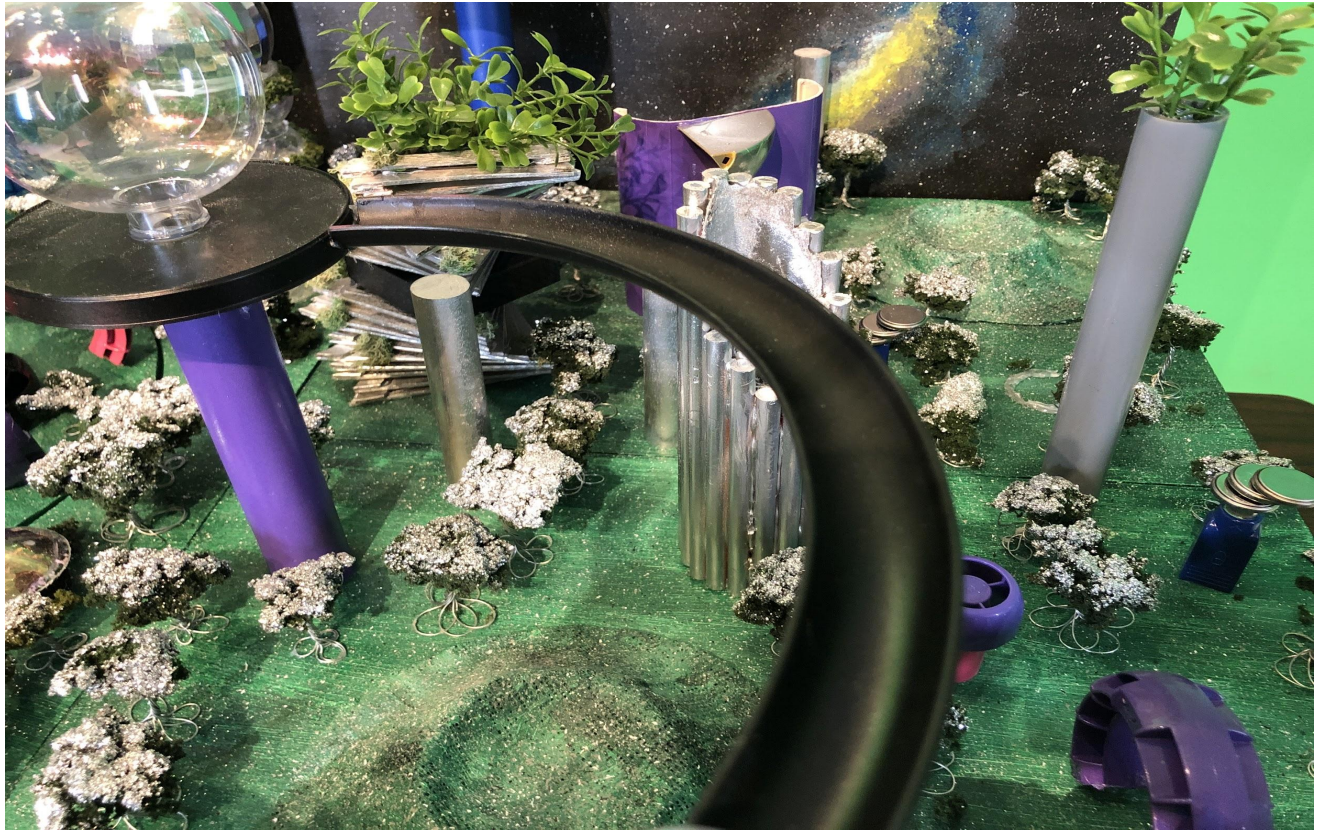
Mixed zoning throughout Selene ensures equitable access to residential, industrial, and commercial zones for all citizens. Within our residential zones, we have three wealth levels: low, medium, and high, which are all built vertically to preserve space. Residences provide all necessities for Selians to live their daily lives, including water derived from moon ice and our Magnetic Water Purification System (MWPS), as well as energy generated from Helium-3 and our Hein Fusion Star. Residential complexes also contain Greenery Gardens which are maintained to provide access to fresh produce for citizens diets!

Commercial Zone

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

Commercial zones are mixed throughout Selene, vary by wealth level (low, medium, high), and are home to bustling small shops, businesses, activities, and programs to suit the needs of all Selians! Sophia's Moon Ice Cream, Zeke's Shop of Big and Tall MRI Spacesuits, Addy's Confection Café, and the Selene City Theatre are just some of our cities various offerings! Powered by Helium-3 derived energy from our Hein Fusion Star, our commercial satisfies our diverse population. If a Selian is looking to hang out with friends, shop, or just buy their necessities, our commercials zones are the places to go!

Industrial Zone



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

Selene's industrial zones contain advanced infrastructure to support innovations such as the Hein Fusion Star, Maglev Train System, Magnetic Water Purification System (MWPS), and Transportation Hub. Our Industrial Zones are strategically placed away from residential zones to ensure safe living for all Selians. While these innovations help support daily life in Selene, research and development in these industrial areas helps support the economy of Selene.

Infrastructure Example 1

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

Magnetic Water Purification System (MWPS) Wastewater Treatment Center

How are these related to the realities/challenges of living on the Moon?:

Our Wastewater Treatment Center takes contaminated grey and brown water throughout the city and retreats it for use throughout Selene. Utilizing nanoparticles coated with ionic liquid, the wastewater filtration system acts like a sponge, removing contaminants from the water and redistributing it for use throughout our city. Without treatment, Selene would not have the supply of water Selians rely on in their daily lives!

Infrastructure Example 2

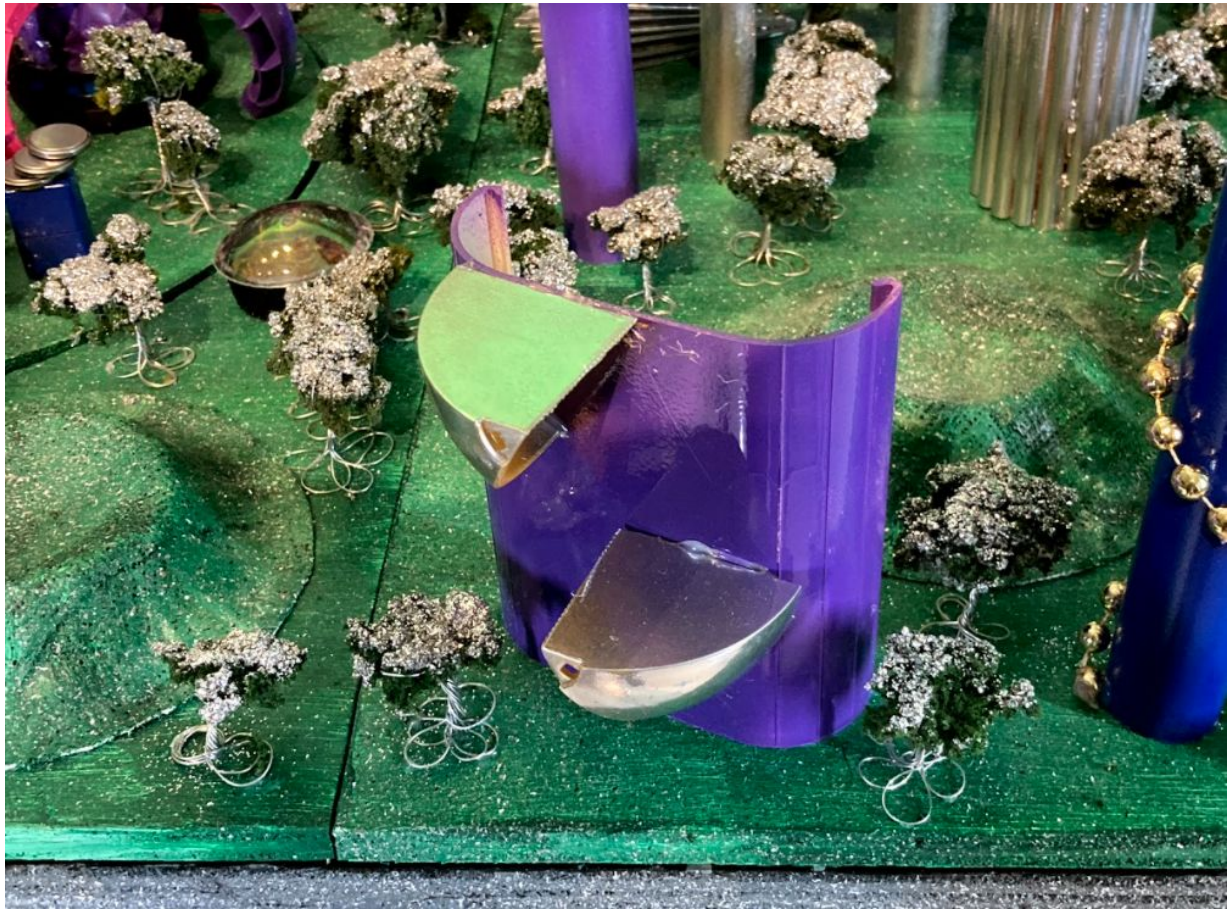
What type(s) of infrastructure are shown here (water, power, utilities, etc.)?:

South Quadrant Park - Selene City Parks System

How are these related to the realities/challenges of living on the Moon?:

On the moon, humans are more prone to mental illness than on Earth. Exercise and recreation are great ways to keep your mental and physical acuity. Our community parks are a great place to exercise and hang out with fellow Selians. Parks are located in each quadrant of the city to ensure all citizens have ease of access. 4D projectors are also installed to allow for sports of all kinds to be played, regardless of playing surface!

City Services Example 1



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

MRI Scanner Spacesuit Health Center

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

Our MRI Scanner Spacesuits are just part of our healthcare system in Selene. When traveling outside of the city, Selians employ the use of MRI Scanner Spacesuits, which protects the body from hazards like radiation and space debris. The spacesuits also actively monitor vitals through micro sensors located on the inner shell. When needed, AI surgeons at the Health Center are alerted and the wearer is transported for medical assistance.

City Services Example 2

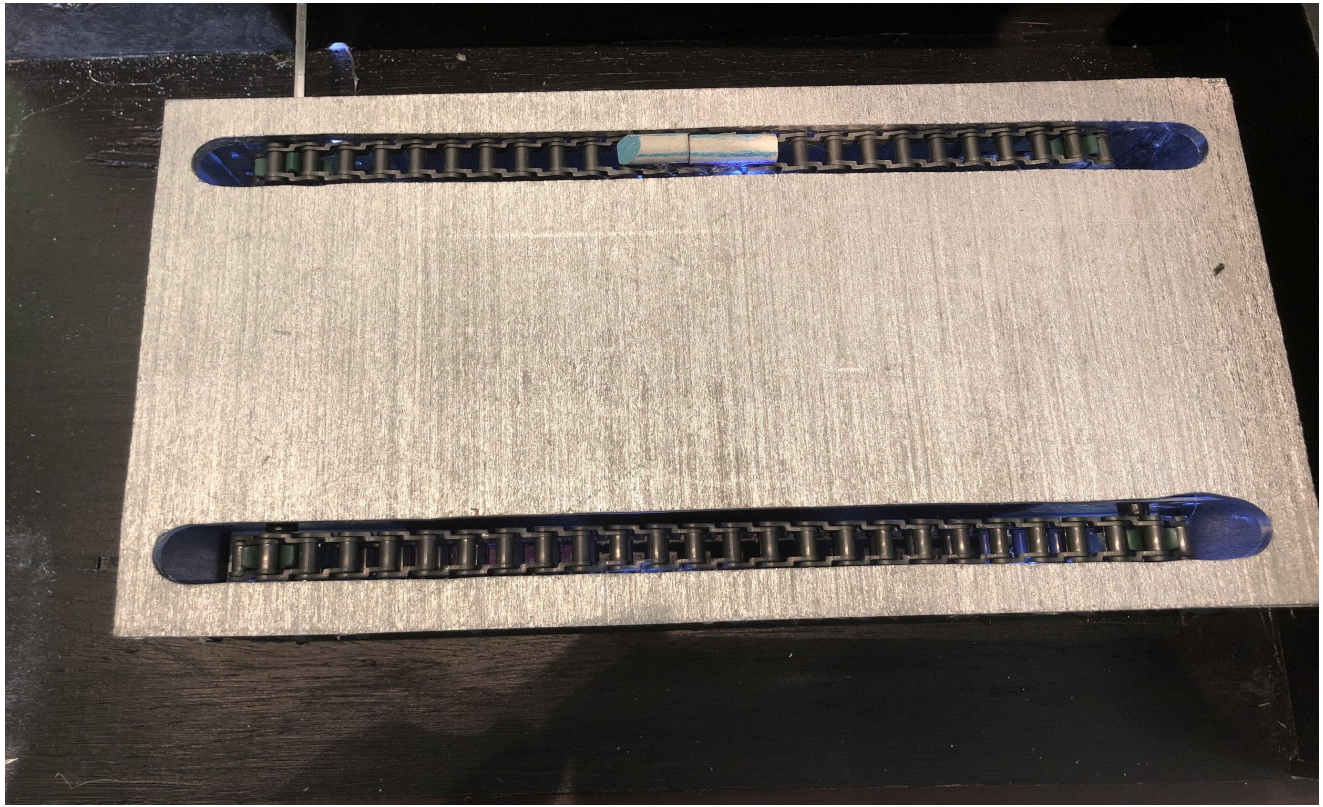
What type(s) of city services are shown here (health, education, etc.)?:

Selene City Educational Infrastructure

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

Continuing education is vital for Selene's sustained growth, and we want to ensure our citizens received individualized, tailored educational programming. Our school system is centered around three things: mental health, moon safety, and career training and preparation. Education is free for citizens aged 5-17, and our school system offers continuing education for specific careers in order to ensure Selians our working on the leading edge of their profession.

Transportation Example 1



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

Maglev Train.

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

The Maglev Train hovers above tracks to travel at high speeds and allows for quick travel to desired destinations. Located beneath the moon's surface within pre-existing lava chutes, our Maglev Train is powered by Helium-3 batteries. Our train system allows for inter and intra city transportation, benefitting both our citizens as well as our tourism sector of our economy.

Transportation Example 2

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

Transportation Hub.

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

The Transportation Hub allows for easy access to a variety of public transportation modes for Selians. Vehicles are powered with Helium-3 batteries as well as Metallic Hydrogen Fuel Cells (derived from moon ice) and allow access to all of Selene and neighboring cities. Traversing the moon's surface, regardless of terrain is now safe, convenient, and reliable thanks to the Transportation Hub!

Living on the Moon (Resource #1) Example 1

Identify the Moon resource shown here:

Moon Ice: Magnetic Water Purification System (MWPS)

What is important for the judges to know about this resource within your city?:

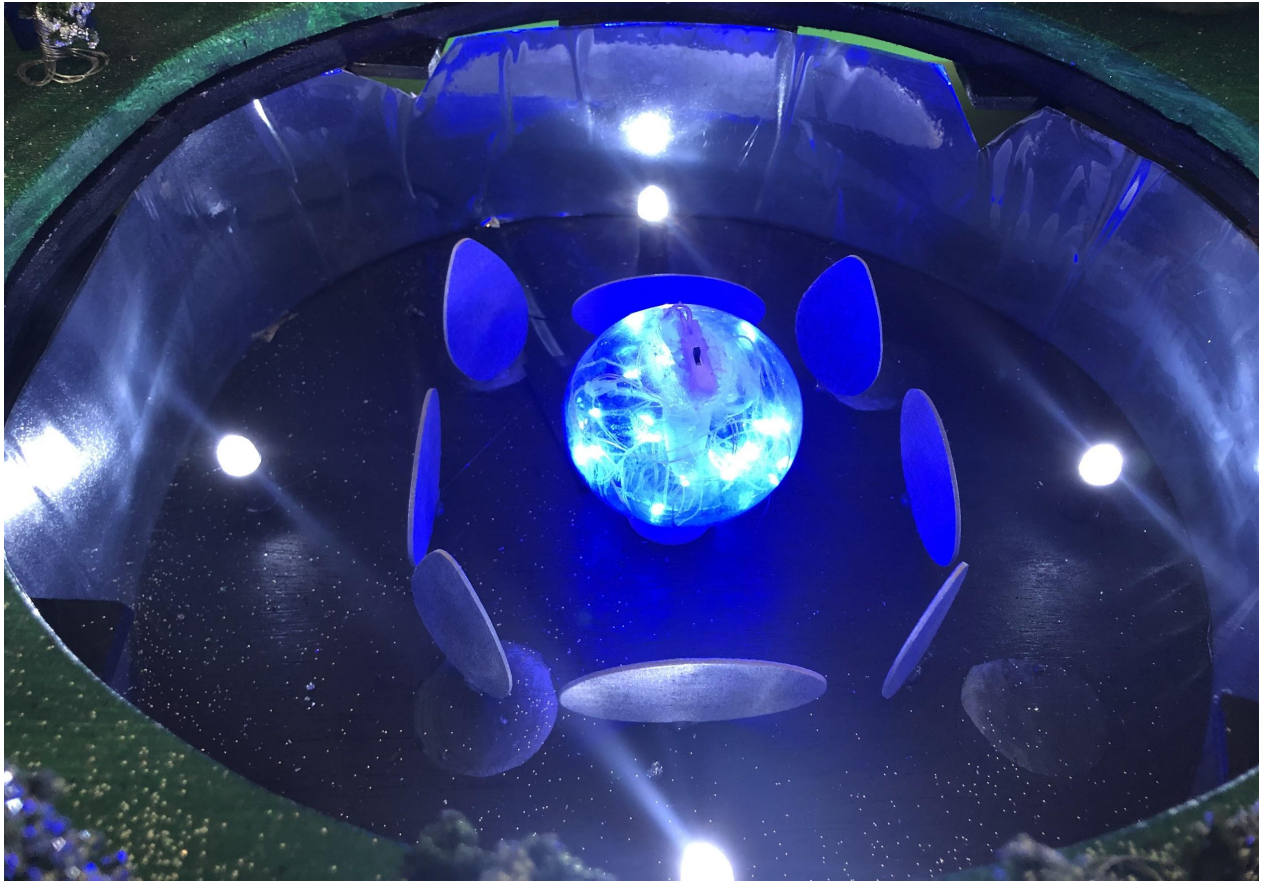
Derived from moon ice, the MWPS provides a clean, accessible, reliable water source for our entire city. Generating over 100 gallons daily per capita, we also use our purified liquid water source to support technology including our Greenery Gardens and Metallic Hydrogen Fuel Cells. With impurities filtered out and excess supply through the MWPS, Selians fear not of water-borne illness or lack of water in their diets!

Living on the Moon (Resource #1) Example 2

What is important for the judges to know about this element of your model?:

Another important use of liquid water derived from moon ice is the creation of oxygen through our electrolysis technology built into our Biodome safety system. We use electrolysis to split hydrogen and oxygen atoms, which allows us to pump oxygen into our Biodome while recycling the remaining hydrogen to use for future use within our electrolysis system. This provides Selians with clean, safe air to breathe within the city, ensuring the health of all citizens and tourists.

Living on the Moon (Resource #2) Example 1



Identify the Moon resource shown here:

Helium-3: the Hein Fusion Star

What is important for the judges to know about this resource within your city?:

Helium-3 is an invaluable resource we utilize in Selene. Collected in its gaseous state by the Ranalli Drone, Helium-3 is input into our Hein Fusion Star nuclear reactor. Located beneath the surface of our city, the Fusion Star produces exponentially more energy than our city requires, which allows us to export it to neighboring cities. Distributed through proton pumps throughout the city, the lights of Selene are always on thanks to the Hein Fusion Star!

Living on the Moon (Resource #2) Example 2

What is important for the judges to know about this element of your model?:

The Ranalli Drone Depot is the central location for our moon resource collection drones. Powered by Helium-3, the Ranalli Drone scans, locates, and extracts deposits of Helium-3 as well as moon ice, whether the resource is located on or beneath the surface. Once extracted, the Ranalli Drone sends the raw resources to Hein Fusion Star and/or Magnetic Water Purification System to begin the conversion to usable energy and water. When sensed, the Ranalli Drone is able to return to the Drone Depot to replenish their batteries, which need recharging after 30 hours of continuous run time.

Section II

BUILD IT: QUALITY, SCALE, AND MATERIALS

Innovative Material & Use Example 1

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

Applesauce caps: We used the twist-off caps to applesauce pouches to top off some of our smaller buildings. We first spray painted them purple, then hot glued them to the tops of spray painted PVC pipes which we cut with a band saw. We cut the PVC pipe 1 ⅝ inches tall, which represent some of our smaller infrastructure. In our actual city of Selene, they have a real height of 158 feet tall.

Innovative Material & Use Example 2

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

Another recycled material we used are popsicle sticks. We created triangle shaped, spiraling infrastructure out of them. Once we blueprinted and designed our prototype, we measured out various sizes of popsicle sticks, cut them down, and glued them together into triangles. Then, we cut the ends off, and glued and stacked them to create a tall, spiraling building. We added a wooden block painted black in the middle of it for support and artificial plants to represent our Greenery Gardens.

Innovative Material & Use Example 3

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

Our final recycled material used are colored pencils. We first blueprinted and prototyped our idea. We created our final angling, cylindrical infrastructure by measuring and cutting the pencils into different heights with the band saw, gluing them together, and finishing them off with a chrome spray paint. We then attached the pencils to an interior cardboard paper towel roll for structural support to aid in attaching it to our model.

Example of Scale

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

<u>Structure 1</u>

What type of structure is this?:

Structure with petri dish and ornament

What size is the structure on the model?:

L: 9 ¾ in., D: 1 ½ in.

What size would this structure be in real life?:

L: 975 ft., D: 150ft.

<u>Structure 2</u>

What type of structure is this?:

Structure with Lithium batteries on top.

What size is the structure on the model?:

L: 1in ., W: 1 ¼ in., H: 1 ¾ in.

What size would this structure be in real life?:

L: 100 ft., W: 125 ft., H: 175 ft.

Moving Part

URL link to team's moving part video:

https://youtu.be/ZuAHjjO0rMM

Section III

JUDGE ASSESSMENT OF MODEL

Futuristic Technology Example 1

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

The Radiation Rejector is a network of interconnected infrastructure which communicate with one another to protect Selene from radiation. Coupled with our Biodome technology, the Radiation Rejector ensures the safety and well-being of Selians. The Radiation Rejector creates an electrostatic shield with the aid of moon ice derived superconducting metallic hydrogen. Once created, the electrostatic shield is charged with electricity from our Hein Fusion Star which generates a magnetic field surrounding the city.

Futuristic Technology Example 2

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

Selene is surrounded by a graphene-infused glass Biodome. Incorporated within our Biodome are strategically placed CO2 splitting installations. These splitters take carbon dioxide exhaled by citizens, stores the carbon, and purifies and releases the oxygen. This technology allows our city to recycle oxygen which preserves the need to create new oxygen with our electrolysis oxygen generators. As a result, we are able to maintain a healthy environment for all while still ensuring our moon resource moon ice in its raw form is utilized only when absolutely necessary. Selene looks to recycle and reuse anything and everything we can!