# FUTURE CITY (CITY PLANNING)

***DiscoverE.org*** *is partnering with* ***NAF*** *to bring their highly engaging and very popular* ***Future City Competition*** *to high schools.*

DISCOVER PRESENTS futuRe City COMPETITION

*Future City is an authentic learning project where students imagine, research, design, and build cities of the future.*

*Throughout this Expedition, you will LEAD YOUR LEARNING by fully engaging with the resources and activities. You will be be asked to -*


- REFLECT about your skills, learning goals, and purpose
- STRETCH your knowledge & skills through active learning
- INNOVATE and iterate solutions for real-world challenges
- SHOWCASE your innovations and learning in a dynamic way

*We encourage you to utilize our* ***Expeditions Idea Book*** *as you navigate this Expedition as a resource and space to get your creativity flowing, organize your ideas and research, and share your innovations and reflections.*

*Every so often you may see this briefcase icon. That indicates an opportune time to have a conversation with a mentor or local business leader to discuss industry trends, ideate solutions, solicit feedback, and/or present your project. (Speak to your educator if you need support making contact.)*

*The middle school version requires a physical model of a city in the future. For the high school version, however, we hope to explore how we can perform city design and planning using immersive technologies (AR/VR/MR) or other dynamic visualizations.*

## *THE FUTURE CITY FRAMEWORK*

DiscoverE's project framework is broken down into three pillars, each supporting and informing the other. (We will delve more into these later in this document.)

| *Project Deliverables* | *Engineering Design Process (EDP)* | *Project Management* |
|---|---|---|
|  |  |  |

## REFLECT

*As you think about your future city, consider the following questions:*

- Picture the city where you live or one that's close by. What are some challenges affecting it?
- Now picture that same city at least 100 years in the future. What might the effects of those challenges be?
- What futuristic adaptation (and design) might you include to keep your future city residents healthy and safe?
- Would your city be here on our planet, or would you consider creating habitats for other planets?
- Which challenges and features would you focus on for your future city: Government, & Budget; Environment & Energy; Food & Agriculture; Travel & Tourism; Smart Tech; Structures & Housing; Transportation; Utilities & Services; Health & Recreation?

## WHAT IS URBAN PLANNING ENGINEERING?

*It is closely related to civil engineering. These engineers "play a pivotal role in urban planning by providing technical expertise and ensuring the feasibility of infrastructure projects. They work together with architects, urban planners, and decision-makers to create the infrastructure that meets the needs of the urban population both now and in the future" (Chitkara University).*

## WHY A CAREER IN URBAN PLANNING ENGINEERING?

*The salary potential in this industry is quite significant! Check out the median yearly salary for different careers in Urban Planning Engineers:*

**$82K**

*median annual wage*

**4K**

*openings for urban planning engineers are projected each year*

**4%**

*projected job growth through 2031*

*Whose expertise can you tap into to learn more about this career? Could they participate in an informational interview with you and your peers or serve as a mentor?*

## REFLECT

*As you think about your future city, consider the following questions:*

- What other types of engineers would you need to collaborate with to design and build a city of the future?
- What role would these engineers play?
- Why are different fields of engineering necessary for city planning?

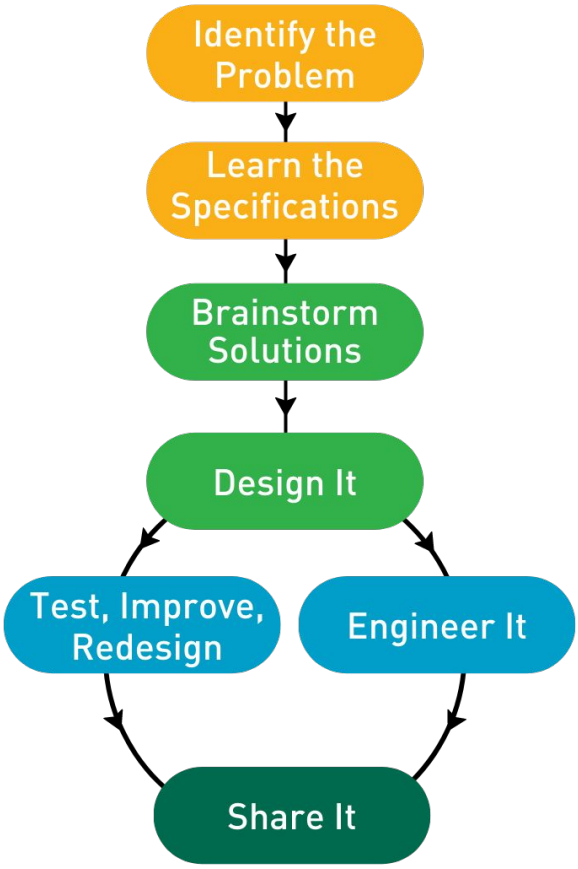
## STRETCH

***Expand your knowledge & skills by trying some of these activities:***

### THE ENGINEERING DESIGN PROCESS

*Future City encourages you to implement the engineering design process. As you work through the process, you are already thinking like an engineer and problem solver. You should be leveraging the engineering design process to build your future city (and later apply it to all kinds of challenges and projects).*

*Check out the graphic on the right and **this video from Future City**.*





### PROJECT MANAGEMENT

*The success of a project often hinges on continued management of the project goals, resources, schedule, and regular check-ins. Project management is a professional organizing system that focuses on keeping projects and teams coordinated and moving forward. How will you manage your project as you move forward?*

*Is there a mentor or industry partner who can discuss the Engineering Design Process or project management to support your innovation? How can you gather mentor feedback as you iterate and innovate?*

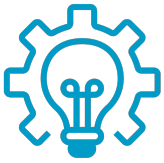
## STRETCH

*Expand your knowledge and Future Ready Skills by trying some of these activities:*

*Here is a list of resources that support city planning using immersive technologies. (Feel free to read or watch those that interest you or pertain to your project or design.)*

- How Augmented Reality is Changing Engineering
- The Role of AR and VR in Urban Planning
- How AR, VR and MR Are Redefining Urban Development and Planning
- Augmented Reality City Tour, AR Interactive Map | 4Experience
- HERE AR City Model
- The CityEngine VR Experience for Unreal Studio

*What other resources can you find that relate to your interests in Future City Planning?*



*As you ideate the plan and design of your city (or a segment of it), STRETCH your perspectives to consider:*

| | |
|---|---|
| **THE WHO** | Who lives in your city? What makes your city appealing to different types of people? |
| **THE WHAT** | What services does your city provide (like education, hospitals, fire stations, public transportation)? What is daily life like for your residents? What do they do for fun? |
| **THE WHERE** | Where will your residents live? Work? Go to school? |
| **THE HOW** | How will you develop innovative/futuristic elements of your city's infrastructure, such as housing, transportation, energy, agriculture? |

## PROJECT DELIVERABLES

*During this process, you will design solutions to a chosen problem (environmental, health, travel, etc.) and create a city that could exist at least 100 years in the future. There will be two phases of deliverables - INNOVATE & SHOWCASE.*

## INNOVATE

*Develop a city of the future that addresses a challenge or need.*

### CITY MODEL

Develop a depiction of your city (or a few segments of it) using immersive technologies like AR/VR/MR or other visual technologies.

You will showcase your future city model and the solution(s) to your identified challenge in a presentation.

On the next page, we listed free and for-pay tech options to support your project.

## SHOWCASE

*Share your learning with your audience.*

### PROJECT PRESENTATION AND Q&A

1. Create a presentation (PPT, site, digital portfolio) to showcase your innovation and learning journey:
   - Describe the unique features of your city and the solution to your identified challenge.
   - Describe your innovative and futuristic adaptations.
   - Describe engineering careers that would support designing your future city.
   - Reflect on what you learned through this project journey
2. You will have a Q&A session with industry mentors as you showcase your project.

*Why not plan a showcase where you and your peers can share presentations with the whole school, at a parent night, or for a panel of industry professionals?*

*ADDITIONAL INFORMATION TO SUPPORT YOUR INNOVATION*

## IDEAS FOR TECHNOLOGY (FREE & PAID OPTIONS)

*Here is a list of technologies that you can use to create your city, presentation, etc. These are suggestions; feel free to leverage the platforms you have at your fingertips or feel more comfortable using.*

### FREE

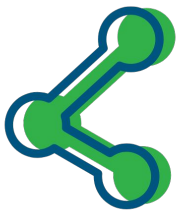
- TINKERCAD
- blender
- Google Sites

### FREE & PAID OPTION

- CoSpaces EDU
- onshape
- SOLIDWORKS
- SketchUp
- BlocksCAD
- bulb digital portfolios

### EXPENSIVE

- AUTODESK
- REVIT
- SUBSTANCE by Adobe



***STUDENTS, SHARE YOUR INNOVATION!***

NAF would love to see your creation! After you get your educator's permission, submit yours **HERE**. We may highlight you on social media!

(We WILL NOT share your work without your educator's and your approval.)