Design Los Angeles Monorail System Routes

Purpose and Learning Objectives

In this project students will research and recommend potential routes for a new monorail system in Los Angeles, California with the goal of enhancing local and regional connectivity to meet transit demand based on projected population growth. Students conduct a mock, real-life project where they imagine the are preparing a plan to present to a regional transportation board. Learning objectives for this activity are:

- Increasing awareness of transportation planning activities and resources within a region in the U.S.
- Locating and analyzing population and transportation demand data; identifying current and predicting future high demand transportation areas and times.
- Interpreting and developing maps; particularly transportation route maps
- Developing visual presentation materials
- Preparing and conducting a presentation
- Collaborating as a group to complete a project (if this project is assigned as a group project)

Estimated Time for Completion

6+ hours. Time for completion can be adjusted by adding more time for research, developing a route plan (with accompanying maps and other visuals), and preparing a presentation for the regional transportation board. Instructors can modify the project to go into each one of these topics and tasks in more detail.

Resources/ Supplies Required

- Computer with internet access, video player software application and speakers, presentation software and graphic design software (optional)

Instructions

Project options: This project made be instructor-led or conducted by students, independently or working in a group. If this project is assigned as a group project, students can be asked to assume different roles such as project manager, research, graphic designer, etc. This project can also be modified for any geographic location. The steps remain primarily the same, however students will need to be directed to population and transportation demand data sources for the desired location.

It is recommended that students complete Transportation Exploration: The U.S. Transportation System activity (**Transportation Exploration Activity** on youth site) before conducting this activity.

Provide the following to students as an introduction to this activity: *For this project you will be pretending that you are a manager at a transportation planning company with national experience planning transportation routes. The Los Angeles Regional Transit Board has hired your company to research and recommend potential routes for a new monorail system in Los Angeles, California with the goal of enhancing local and regional connectivity to meet transit demand based on projected population growth. You have been chosen as a consultant because of your knowledge of transportation systems and experience with the design of the monorail systems. Your company will present the transit route options you recommend to the Los Angeles Regional Transit Board (the class). The presentation will include charts to display data gathered and maps that show the preferred/recommended routes as well as other materials/items you choose to use.*

1. Ask students to go to the **Transportation Youth Academy** website and click on the **Design Los Angeles Monorail Transit Routes link**.
2. Instruct students to familiarize themselves with how a monorial system operates by watching the **SMT Rail Greenest Smart Mass Transit on the planet** video for this project on the website. Instruct them to take notes on how many people/goods the system can transport.

- Next students will be designing routes for the new monorail system in the city and county of Los Angeles, California. Students begin by conducting research. Use the list of websites below, as well as instruct them how to conduct their own research, to investigate population statistics and data on trends in transportation in Los Angeles. Begin with the **Southern California Transportation Outlook 2040** PowerPoint and accompanying **pdf document for students**.

This report contains current and estimated population and transportation demand information to the year 2040 in Los Angeles county and the surrounding counties in Southern California; including route maps. Review the document with students; particulary helping them to understand the information and it's use for determining potential routes for the new monorail system.

3. Instruct students to predict the population of the city and county of Los Angeles 25 years in the future. Explore alternatives to current transportation routes that may accommodate this increased population.

4. Instruct students to design a route plan for the new monorail system that will accommodate the projected growth while helping to improve current transportation congestion problems and to achieve a more efficient transportation system. Here are key questions students should consider in their design.

    a. Where are the existing transportation bottlenecks in the Los Angeles area?

    b. How many people will need to use the monorail system each day 25 years from now?

    c. Where will people live and work in 25 years? What do the routes look like that people will take from where they live to where they will be working? What are other routes people might take for activities such as shopping, travel, and entertainment?

    d. Are there any geographic limitations to where the monorail system can operate?

    e. Consider what additional communities and counties, beyond the city and county of Los Angeles, the monorail should extend to. Think about how people who live in other areas might travel to Los Angeles to work or for activities in entertainment. Also consider how people who live in Los Angeles might travel to surrounding areas for work and other activities.

    f. Will the monorail system be used to move/transport goods? Look at data on goods movement in the area.

    g. Is it feasible to install the monorail system using existing highways in the Los Angeles area or will new routes need to be built? Even if it is feasible to install the system on existing highways, will this be sufficient to meet the future demand for the monorail system?

    h. What other transportation projects are currently planned? How many people are they projected to transport and where will they be located?

    i. Are there other factors that need to be considered such as environmental impact; preservation of local history, culture, and/or customs; aesthetics; what communities will want from the transit system 25 years from now; or other factors?

    j. Are there other questions you think are important to consider in your route design?

5. Instruct students on how to develop maps showing the recommended routes based on their research.

6. In addition to the maps, instruct students to develop other visual aids to use as they present their proposed route design. Instruct them to include information on the research materials they used to support their recommended routes; the goals, values, and interests that were considered

when designing the routes; etc. Ask them to think about which kinds of information would be most helpful to support their recommendations and include that information.

Online Planning and Mapping Resources for This Activity:

- Los Angeles Almanac: http://www.laalmanac.com/LA/la00a.htm. This site contains a wealth of information and data on Los Angeles. On the site a link is provided for data on individual communities within the City of Los Angeles. The site also has a link to Los Angeles transportation and traffic data. And the site contains community, city, and county maps. Here is a link to the City of Los Angeles map: http://www.laalmanac.com/LA/lamap2.htm.
- LA Metro Transportation Statistics: https://www.metro.net/about/library/library-research/research-tools/transportation-statistics/
    - LA Metro Facts at a Glance: https://www.metro.net/news/facts-glance/#. Bus and rail, cars and bikes, agency information (occupations, budget, etc.), and project tracker
    - LA Metro Projects: https://www.metro.net/projects/. Includes an interactive timeline of past, present, and future LA metro development projects.
    - LA Metro Ridership Statistics: https://www.metro.net/news/ridership-statistics/ This site has ridership statistics for the most recent months (compared to the same month in the previous two years) for bus and rail as well as a link to a searchable site (http://isotp.metro.net/MetroRidership/Index.aspx) where you can select ridership statistics by year, period (annual, quarterly, monthly, etc.) and by mode of transportation (all, bus, rail). A tab for a page with ridership statistics for cars and bikes is also available on the site.
- Los Angeles Department of Transportation Current Count Data site: http://ladot.lacity.org/what-we-do/traffic-volume-counts/current-count-data.
- Detailed traffic count data can be found on NavigateLA http://navigatela.lacity.org/ (Internet Explorer Only), and a tutorial for how to use the site is available at: http://ladot.lacity.org/sites/g/files/wph266/f/lacityp_027156.pdf.
- An extensive gallery of maps for Los Angeles is available on the NavigateLA site at http://navigatela.lacity.org/navigatela/common/mapgallery/index.cfm.
- The Southern California Association of Governments (SCAG) is the designated Metropolitan Planning Organization (MPO) for Imperial, Los Angeles, Orange, Riverside, San Bernardino and Ventura Counties. SCAG is mandated by the federal government to develop a multimodal long-range transportation plan that provides a 20-year vision for investing in our transportation system, and update it at least once every four years. The most recent update is for 2016. At the heart of the 2016 RTP/SCS are over 4,000 transportation projects—ranging from highway improvements, railroad grade separations, bicycle lanes, new transit hubs and replacement bridges. These projects seek to reduce traffic bottlenecks, improve the efficiency of the region's network, and expand mobility choices for everyone. Watch the 2016 RTP/SCS video to find out more about the plan at: http://scagrtpscs.net/Pages/2016RTPSCS.aspx#2016-RTPSCSvideo. And an interactive executive summary of the plan is available at: http://scagrtpscs.net/SiteAssets/ExecutiveSummary/index.html.
- Urban Transport Fact Book: Los Angeles Index: www.publicpurpose.com/utx-la.htm. This site contains commuting data for Los Angeles Metropolitan Area Los Angeles-Orange-Riverside-San Bernardino & Ventura Counties.