Environmental Challenge International (ECi) Student Competition

Air & Waste Management Association Annual Conference & Exhibition
June 25-28, 2018, Québec City, QC, Canada

A New Link for Québec City

The Purpose
Students from around the globe will be landing in Québec City, Québec, Canada, for this year’s Environmental Challenge International. This contest gives student teams experience with proposing effective solutions to a simulated environmental problem—a problem based on real-world needs, site conditions and events. The teams will also get the chance to present their solution to a panel of environmental professionals at A&WMA’s 2019 Annual Conference and Exhibition (ACE).

Although the challenge is somewhat qualitative, teams will be expected to address a wide range of concerns related to the environment, energy, and health. Teams will be evaluated based on a variety of issues, such as, how the problem is interpreted, how conclusions were determined, and how well the team can communicate its reasoning and judgements. In addition to the scientific and technical aspects of this competition, resolution of political, public perception and community issues along with appropriate regulatory approaches will also be important. As you work through the exercise, don’t forget to have fun! This environmental challenge “gives everyone attending the conference a chance to participate and gets the professionals of tomorrow interacting with the professionals of today.”

The Challenge

Québec City is the Provincial capital of the Province of Quebec. It has witnessed exceptional economic growth over the past 15 years. The oldest European settled city in North America, Québec City is built on an exceptional site on the north shore of the Saint Lawrence River. With the recent economic growth, the city has expanded well beyond its 18th century fortifications to suburbia all around the periphery, and in particular on the south shore of the Saint Lawrence River, right across from Québec City. Two bridges allow to cross between the north and south shore. The first bridge dates back from the beginning of the 20th century and allows for trains and two lanes of traffic. It is the longest cantilever bridge in the world. A newer bridge built in the
second half of the 20th century has six lanes of traffic (three each way). A passenger ferry also allows pedestrians and cyclists to cross the river. With the economic and population growth of the Quebec City metropolitan area, the bridges have come to saturation and commuters often find themselves stuck in traffic for more than a half hour, to cover the 1 km trek across the river.

The year is 2025. According to the newly elected Premier of Quebec, Jacques Gagné, who was elected on an economic growth and government efficiency platform, this situation leads to reduced productivity of the workforce and increased pollution in the greater Quebec City area. During the electoral campaign, the new premier has promised to build a third link between Quebec City and the south shore. “We need more economic development in this province, and this requires better mobility,” said Gagné. The Mayor of Quebec City, Pierre Blasé, supports the project of a third link but is also pushing at the same time a mass transit project based on subways, tramways and light trains, while the city currently relies on buses for its mass transit system. “We support any initiative that will bring economic development to our great City. This being said, this project should not jeopardize our mass transit project by pulling funds away from our great project,” said Blasé. Initial plans for the new link propose to build a new bridge on the East side of the city, passing through picturesque Ile d’Orléans. The mayor of the island, Jeanne Nèmard, is worried that the proposed location would mean building a divided highway on farmland, creating noise, pollution and reducing the flow of tourists in search of peace and quiet. Opposition parties and environmental groups have been quite vocal against the project, arguing that it would lead to increased pollution, negative health effect, increased urban sprawl, and increased greenhouse gas emissions due to increased traffic. Paule Laverdure, the head of Laurentides Club said “This project is anchored in the 1950’s. As we are trying to move away from our dependency on fossil fuels, putting more cars on the roads and building more homes in suburbia is pure madness. We will oppose this project by all possible means: legal, political and civil disobedience”.

In light of increased opposition to the project, the provincial government has mandated your firm to propose a socially acceptable solution that will also address the issue of ever-increasing gridlock on the greater Quebec area. Your mandate is to propose different scenarios, consult the population, all levels of government, and come up with one recommendation. You must also evaluate the environmental, health and social impacts of your project. The objective will be to minimize negative impact of the project while improving mobility.

Your Assignment

In light of increased opposition to the project, the provincial government has mandated your firm to propose a socially acceptable solution that will also address the issue of ever-increasing gridlock on the greater Quebec area. Your mandate is to propose different scenarios, consult the population, all levels of government, and come up with one recommendation. You must also evaluate the environmental, health and social impacts of your project. The objective will be to minimize negative impact of the project while improving mobility.

There is no easy answer that will satisfy all concerns. You must do your best to provide the most robust recommendation to the provincial government. Keep in mind that other levels of government may have a different point of view. Your recommendation should be defendable by the provincial elected officials. Your recommended plan should articulate how to address the concerns of all levels of government, regulatory agencies, and environmental groups and ensure the project provides the most tangible environmental, economic, and social benefits.
At a minimum, you should consider two or three alternative solutions that weigh environmental, social, and economic interests. You should have a preferred solution to present to the government. In addition, keep the following questions in mind and address them in your solution:
• Are there potential alternative locations for the proposed link?
• What are different technical alternatives? (Be creative.)
• What are the costs of the different alternatives, keeping in mind long term maintenance costs?
• How will the project be financed: through taxpayers’ money, special tax, toll, or other?
• What will be the impacts on the environment?
• How will technological advancement benefit solutions?
• What will be the impacts on traffic during the construction?
• What will be the impacts on the local and provincial economy during construction and in the long term?
• How was your recommended option selected and why?
• What can be done proactively to build support and foster good relationships with the local communities that will be affected by the project?
• How will the recommended option resolve mobility issues?

The government has promised that the new link would be ready before the next election four years from now. Therefore, you must take the schedule into account in your recommendations.

Initial Background Information

A route proposal is provided below. The project costs have been estimated at $2 billion. How will future costs of maintenance and repairs be funded? This initial information is provided for your reference and consideration in developing your recommendation and proposed plan to implement the project. You will have time during the first day on the conference to interact with the various role player to hone your presentation and to incorporate the tweak.
Existing Bridges

Québec City

Proposed new link location

South Shore