



New Model Supports Québec City's 100% Electric Tramway

Bentley OpenPaths™ provides platform for ridership forecasts, optimizing planning and stakeholder investment

Launching a sustainable public transport network

Operating 61 bus lines and 75 commuter lines throughout Québec City, Réseau de transport de la Capitale (RTC) provides public transit services and integrated transportation solutions committed to ensuring the mobility of 569,000 citizens across 556 square kilometers. Aligned with their goals, RTC, the City of Québec, and the government of Québec are launching a structured public transport network with nearly 100 kilometers of transit corridors, the backbone of which is a 100% electric tramway.

Connecting easily to other transport modes, the new network aims to optimize travel flow and shorten travel times for public transit passengers. It will offer improved availability of public spaces, safe pedestrian and cyclist access, and the refurbishment of surface and underground infrastructure, supporting harmonious urban integration and sustainable, efficient transport, positioning Québec as one of the most attractive cities in Canada.

Understanding the entire mobility market

The new structured transit network (RSTC) aims to decrease car dependency and increase transit offering. To meet these objectives, RTC and their mobility data analysis team began evaluating and forecasting modal transport shifts, ridership, transit access, and travel demand. "We needed to understand

what the modal shifts would be between traffic, transit, and active modes, and how transit ridership would evolve," explained Jérôme Boucher, service planning analyst at RTC. Initially, they used different software solutions to model traffic and transit modes. However, this approach failed to represent the multimodal interactions between traffic, transit and active modes, which was crucial to support the RSTC.

RTC knew they had to build a state-of-practice travel demand model to provide robust insight and assess mobility scenarios proposed by their stakeholders. They wanted a trusted, flexible technology solution to answer new and unforeseen questions. "We had so many questions from politicians, community members, and internal stakeholders, and we really wanted to understand every part of the model to be able to explain results with confidence," said David Tanguay, service planning analyst at RTC. To evaluate and optimize RSTC planning and design, they needed an open, flexible transport modeling platform to communicate evidence-based scenarios.

Leveraging Bentley OpenPaths for comprehensive transport modeling

RTC decided to use Bentley OpenPaths EMME® to implement one model for traffic, transit, bike, and pedestrian assignments for the whole city, and Bentley OpenPaths AGENT® to implement their demand model and calibrate it.

Project summary

Organization

Réseau de transport de la Capitale (RTC)

Solution

Rail and Transit

Location

Québec City, Québec, Canada

Project playbook

Bentley OpenPaths

Project overview

- RTC ensures mobility of people in Québec by offering public transport and promoting integration of transportation solutions.
- They are planning to operate a modern, 100% electric tramway as part of a structured public transit network project.
- To optimize planning and design, RTC used Bentley OpenPaths to develop an integrated multimodal transport model.

ROI

- Leveraging Bentley OpenPaths enabled RTC to create a comprehensive model, accurately simulate various multimodal scenarios, and optimize demand forecasting.
- Working in an open modeling platform streamlined collaboration and communication among internal and external stakeholders and consultants.
- The model provided valuable insight to support transport infrastructure decisions and investment.

"The transport model we assembled with Bentley OpenPaths represents the whole mobility market—traffic, transit, bike, and pedestrian—in one single database and model," confirmed Boucher.

The model enables accurate simulation to analyze scenarios of travelers using varying transport services in Québec City and easily understand how each mode competes against each other. Working in a transparent modeling platform provided RTC with valuable insight, accurate forecasting capability, and control, empowering them to answer questions from politicians, community members, and internal stakeholders.

Accurate, accessible model supports investment decisions

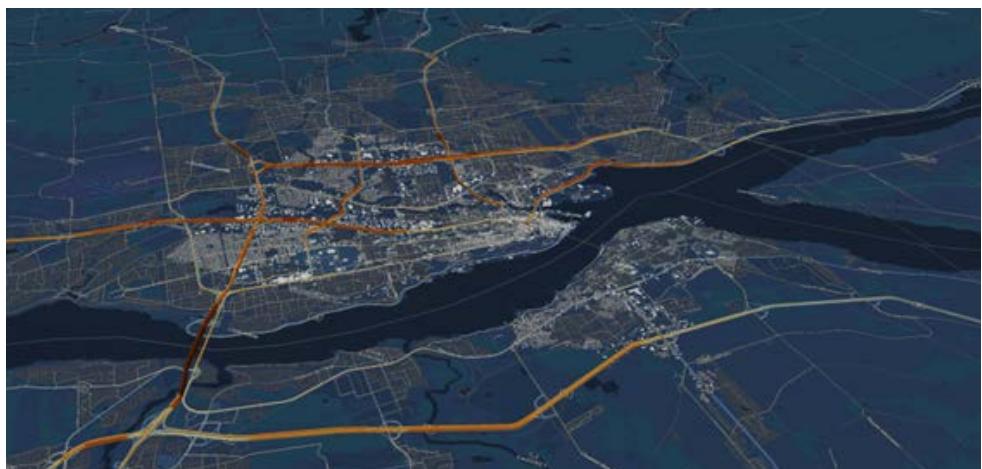
"Our model implementation with Bentley OpenPaths EMME and Bentley OpenPaths AGENT is transparent and flexible," said Boucher. Bentley's integrated transport modeling technology enabled more efficient

collaboration with external stakeholders, made it easier to accurately answer stakeholder questions, and improved workflows with the transit service planning team. By leveraging multimodal data to perform realistic simulations within one model, RTC optimized demand forecasting for more effective and cost-efficient planning and design of the new RSTC.

"Bentley OpenPaths is very useful to quantify the modal shift and expected ridership resulting from offering new services," stated Emmanuelle Reny-Nolin, head of mobility data at RTC. The solution has empowered RTC and the city of Québec to build a strong business case to support major transport infrastructure decisions and investment. The city now benefits from a model that streamlines communication and collaboration among all parties involved in transport design and decision making. "The model is an investment which now pays dividends when it comes to studying other projects," concluded Boucher.

"This [Bentley OpenPaths] model is a rigorous simulation tool and enables us to analyze scenarios involving variations in transit service in the Québec area."

-Emmanuelle Reny-Nolin, Head of Mobility Data, RTC



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