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CANADIAN
CONSULTING
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AWARDS

Valley Line LRT Stage 1
Procurement

Project Summary



The Valley Line LRT is the City of Edmonton's largest infrastructure project and the first implementation of their new vision of mass transit. As the Owner's Engineer, AECOM built and led the team that developed all reference design and procurement documents necessary to build a 13km Light Rail Transit system via a public- private- partnership contract. The new system will be street-level, urban-friendly, and offers premium public transit for the first time to southeast Edmonton.

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Innovation

The Valley Line is Edmonton's first step in transforming its current high-floor, largely segregated LRT network to a low-floor (street-level), urban-integrated one. This undertaking required not only a shift in local engineering thinking and practices, but also required re-educating the public and partners about an entirely new set of goals and purpose for LRT development. These goals include: transforming the city into a denser more compact city, promoting transit-oriented development, and building more sustainable, less invasive transit infrastructure.

Furthermore, the City directed that the project be delivered as a Public-Private Partnership (P3), a mechanism with which the City had no prior capital infrastructure delivery experience. This meant that AECOM not only needed to pull together a team of specialists to deliver the project, but that that team would need to align longstanding local LRT engineering and procurement practices with very new practices that were largely untested in a Canadian market.

AECOM formed Connected Transit Partnership, consisting of over 12 local and multinational firms specializing in all areas of infrastructure delivery. This team balanced local LRT project knowledge with international transit infrastructure expertise and innovation. The collaboration began with the establishment of a shared project office where all project personnel worked together, including AECOM's project management and engineers; international design, finance and legal expertise; and City staff. The next step was to mould this diverse group of interests



into a coherent team to provide a consistent approach to project decisions. This was accomplished through extensive project team partnering, value engineering sessions, multidisciplinary team meetings, and assisting the City personnel in understanding the different roles and approach inherent in a P3 project.

Finally, AECOM guided the project through the P3 procurement process, maintaining competitiveness between three consortia over a year-long bid process. Unlike other P3 transit projects in Canada, the Valley Line LRT – Stage 1 is a complete design-build-operate-maintain project that also includes partial financing from the P3 proponent and requires them to provide vehicles as part of a project scope that last 35 years. Setting up a contract covering all these elements was the most significant undertaking of its kind in Canada; and all decisions required envisioning consequences from a total life cycle cost-benefit approach. The project was successfully tendered in February 2016 at an approximate 21% value for money savings over traditional procurement.

Complexity

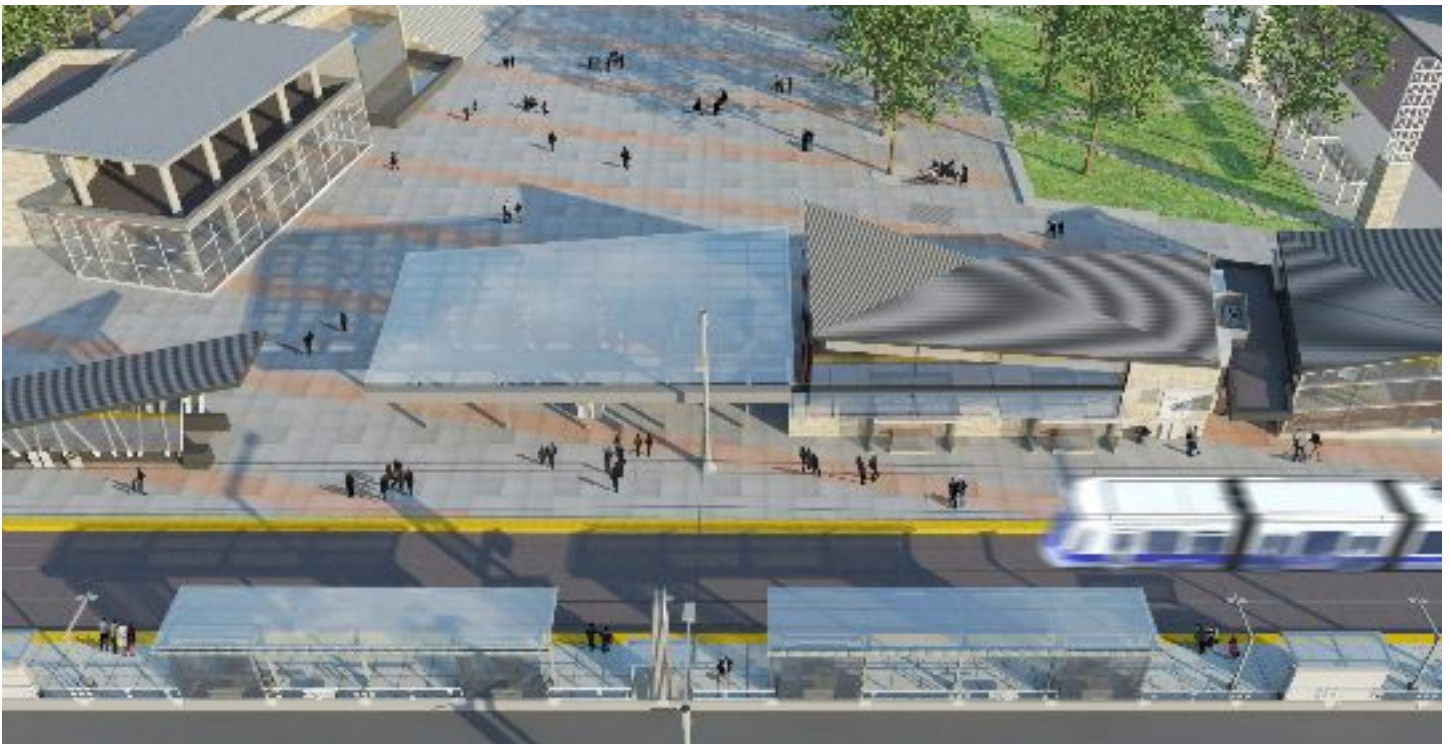
Given the Valley Line's significant scope, there have been numerous challenges to AECOM's team.

The most significant challenge has been engineering a street-level LRT in a city with one of the lowest per capita population densities in North America (123.0 / sq.km.). In other words, setting up an urban-style LRT in an environment where the average citizen expects to be able to drive relatively traffic-free and is concerned with mass transit 'interfering' with road traffic.

One of the City's main goals is to use the new LRT to encourage a more compact urban form, while at the same time minimizing disruptions on existing neighbourhoods. This meant AECOM was required to engineer street-level project infrastructure within very tight corridors, often requiring creative solutions to pack in rail infrastructure, overhead catenary, traffic lanes, and minimum-width sidewalks while not expropriating property or removing existing trees.

Furthermore, the project involves a significant river crossing that passes through the middle of an environmentally protected zone—the North Saskatchewan River Valley. Permission to use this corridor involved the creation of a comprehensive environmental impact report which involved comprehensive mitigation plans for construction and operations, further incorporating a paleontological study, historical resources report, and comprehensive indigenous consultation.

Finally, AECOM also provided specialist personnel and support to assist with public engagement efforts, participating in over 25 large-scale public meetings in an effort to educate the public on the new type of LRT, how it differed from Edmonton's current LRT, and what to expect as the project advanced.





Social and Economic Benefits

The southeast quadrant of Edmonton, which the Valley Line will serve, was largely developed during the mid-20th century, leading to neighbourhoods that are curvilinear and cul-de-sac based. As a result, mass transit through the area is indirect, slow, and consumes taxpayer-funded manhours and fuel. As a result, most residents own private vehicles.

The new Valley Line will provide a more direct transit corridor into downtown Edmonton, while still preserving the character and nature of the neighbourhoods it serves. As such, it will allow southeast Edmontonians cost-effective transportation to employment, education, and entertainment opportunities.

As per the Statistics Canada Input-Output model, the project's further economic benefits include construction generating 20,000 indirect, direct and

induced jobs in Alberta and another 3,300 jobs in Canada, leading to \$1.3 billion in direct, indirect and induced wages in Alberta and another \$200 million in the rest of Canada. Operations and Maintenance of the project will generate an additional 12,100 direct, indirect and induced jobs in Alberta and 1,850 jobs in the rest of Canada, leading to \$1.1 billion in direct indirect and induced wages in Alberta and \$100 million in the rest of Canada.

The project will also help retain skilled engineers and trades in the local market, increase apprenticeship certification within the province, strengthen Edmonton's construction industry (a core competitive sector in the city's economy) and attract workers to Edmonton's high tech and emerging knowledge-intensive industries (as convenient mass transit has been identified as a key job search factor for this demographic).

Environmental Benefits



The Valley Line project focuses on mode shift, providing citizens with premium public transit in conjunction with shared-use pathways and other infrastructure that encourages a more active, greener lifestyle. The auto-to-transit mode shift for the corridor is estimated at a ridership efficiency of 17,000 vehicle trips per day-- a reduction of 5,340 metric tons of greenhouse gasses (GHG) per year.

Beyond efficiencies and GHG reduction, however, AECOM also developed a 'Green Charter' for the project, based on public engagement and industry best practices, which led to a core set of project principles called Sustainable Urban Integration (SUI). SUI is meant to ensure that the new LRT will integrate into the communities it serves in an environmentally and community-friendly manner. Examples include:

- Smaller scale stops, with pedestrian-friendly zones around them and safe, signalized street crossings.

- Seeking community input into aesthetics around stops and infrastructure, ensuring each area of the line shares character with the local community and is built using sustainable materials and practices.
- It was important that SUI innovations not be lost during procurement under a lowest-bid-wins model. The team accomplished this by creating a SUI guidebook that defined sustainability parameters and desired design approaches but let the proponents exercise creative flexibility within those parameters. The team then, through an additional procurement phase, required proponents to demonstrate they had met those parameters prior to being allowed to place a final bid. During debriefing, bidders noted this approach generated "true dialogue and openness" in their interactions.

Meeting the City of Edmonton's Needs

AECOM was required to:

- Supply a team of international specialists from all infrastructure project disciplines.
 - AECOM formed a team, Connected Transit Partnership, consisting of over 12 local and multinational firms specializing in all areas of infrastructure delivery.
- Develop the necessary engineering designs and procurement readiness documents in order to ensure a successful P3 procurement that realized the City's vision.
 - AECOM developed both the final Project Agreement as well as a multi-stage procurement/bid process with both sustainability and technical 'gates'--checkpoints where the project team would review proponent submissions and provide feedback.
- Procure a contractor capable of delivering the Valley Line project within budget.
 - In February 2016, the Valley Line - Stage 1 was awarded to TransEd Partners, a consortium consisting of Bechtel, EllisDon, Bombardier Transportation, and FenGate Capital. The successful bid achieved a value for money savings of approximately 21% over traditional procurement.
- Successfully transfer project risk to the contractor.
 - TransEd Partners assumed all of the key risks the City wanted to transfer, most notably that of schedule delay, subsurface conditions, and performance as per the Project Agreement.
- Remain within budget.
 - AECOM remained within the City's accepted budget scope for the duration of the procurement phase.
- Keep to the procurement schedule.
 - Design and procurement was completed on time, with RFQ being released in Q2 2014, RFP in Q3 2014, bids submitted Q3 2015, preferred proponent identified Q4 2015, and successful proponent identified in Q1 2016, allowing construction to begin on schedule.



About AECOM

AECOM is built to deliver a better world. We design, build, finance and operate critical infrastructure assets for governments, businesses and organizations. As a fully integrated firm, we connect knowledge and experience across our global network of experts to help clients solve their most complex challenges. From high-performance buildings and infrastructure, to resilient communities and environments, to stable and secure nations, our work is transformative, differentiated and vital. A Fortune 500 firm, AECOM had revenue of approximately \$20.2 billion during fiscal year 2018. See how we deliver what others can only imagine at aecom.com and [@AECOM](https://twitter.com/AECOM).

