



**Calgary**



City of Calgary

# Development Next to Freight Rail Corridors Policy

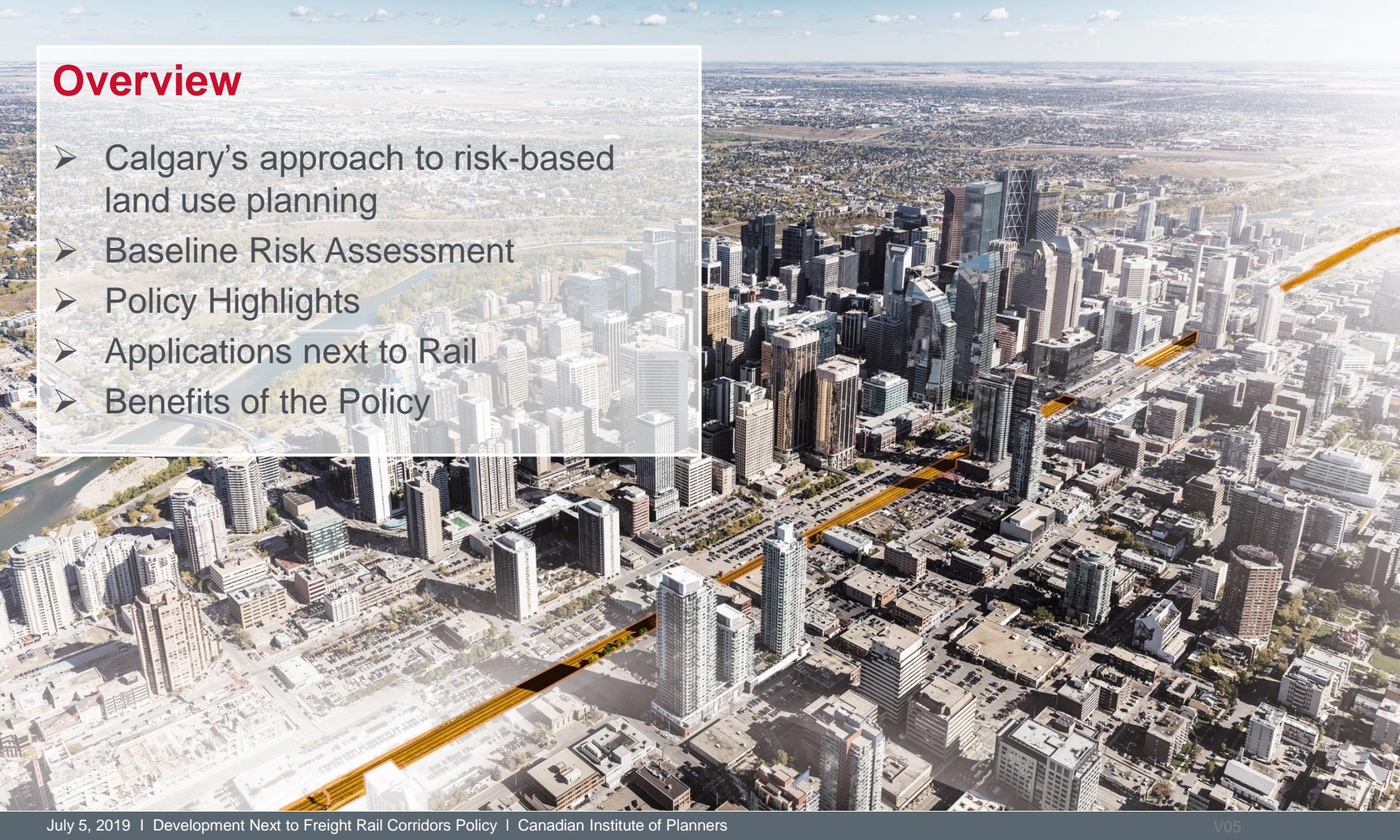
**Abdul Jaffari, RPP, MCIP**  
**Cliff De Jong, BA, (RUD)**

Canadian Institute of Planners | National Planning Conference | Ottawa July 2019

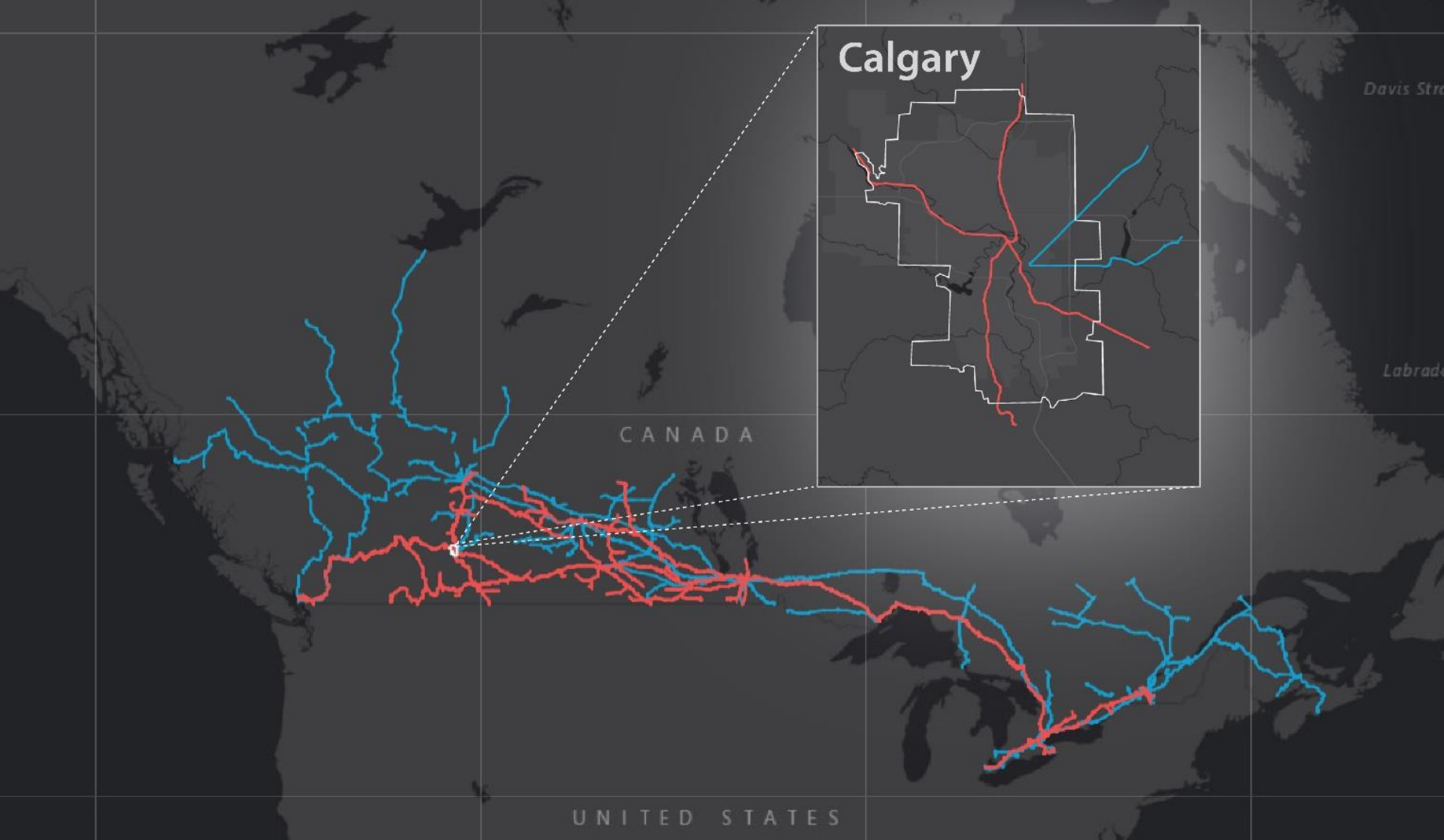


# Overview

- Calgary's approach to risk-based land use planning
- Baseline Risk Assessment
- Policy Highlights
- Applications next to Rail
- Benefits of the Policy







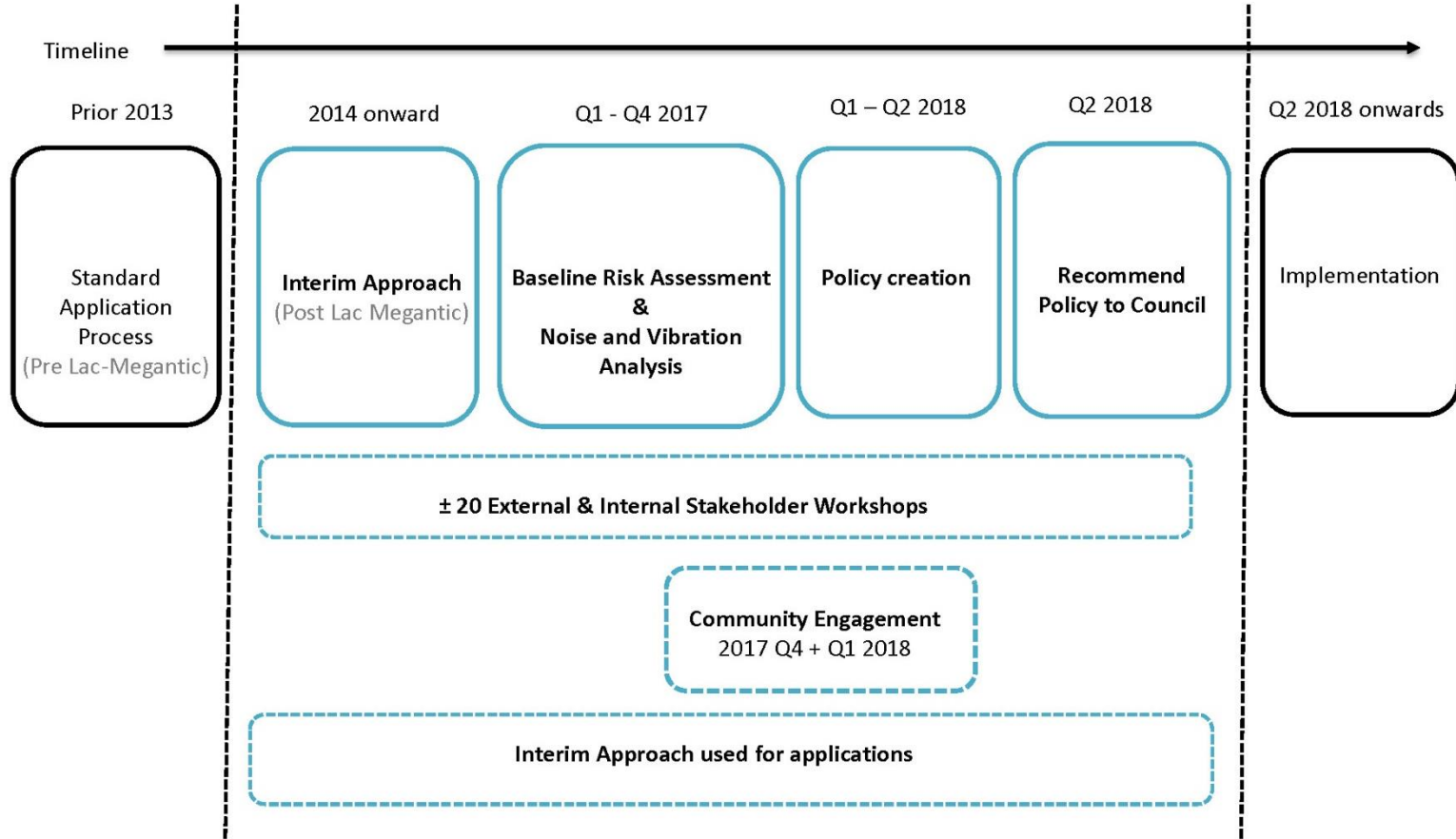
# Calgary

CANADA

UNITED STATES



# Project Evolution



# Need for a Baseline Risk Assessment

- Perception of risk
- Determine the actual risk posed by rail operations
- Define the risk
- The risk is the probability of a train derailment leading to a fatality





# Risk of Fatality – Tolerance Levels

Uses Allowed without Mitigation	Risk Tolerance Levels (Annual Likelihood of a train derailment leading to a fatality)
Manufacturing	1 in 10,000
Low Density	1 in 100,000
High Density	1 in 1,000,000
Sensitive Uses	1 in 3,333,333

Risk of Fatality – Other Sources (Actual)	
Car Accidents	1 in 50,000
Fire in a building	1 in 120,000
Major Storms	1 in 5,227,000

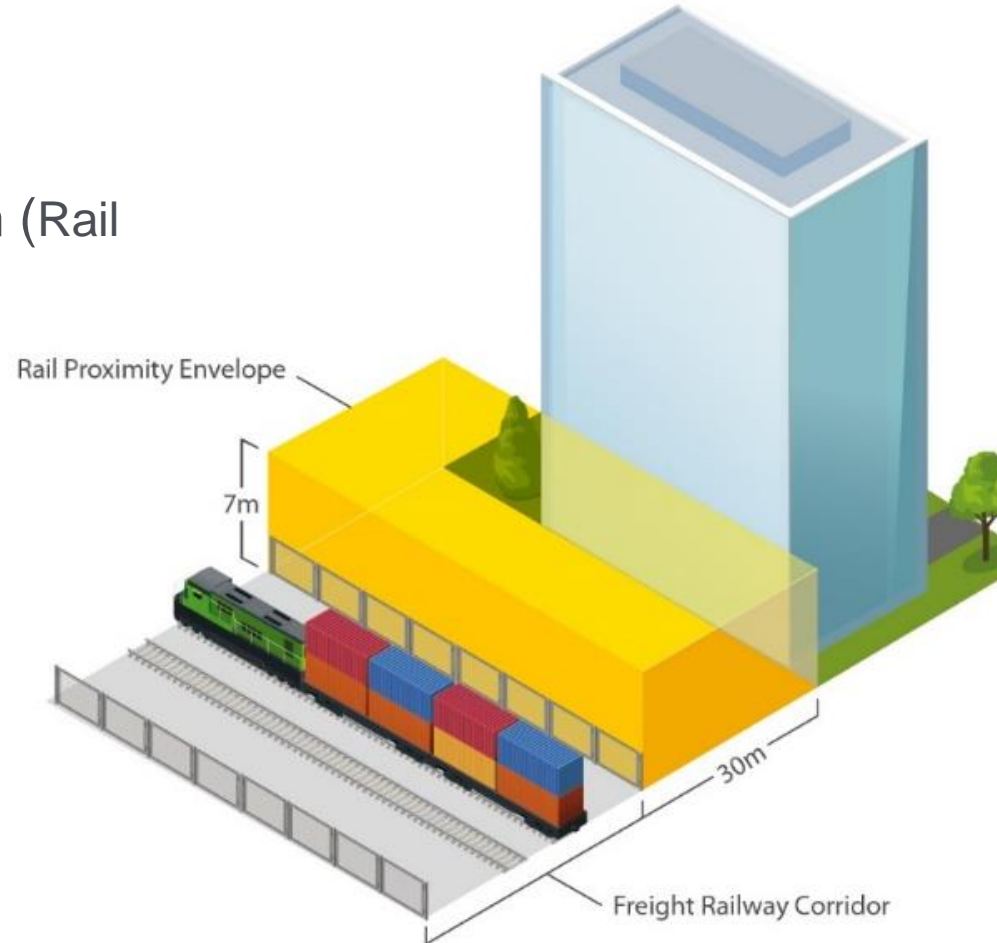


## Objectives of the Rail Policy

- Protect building and building occupants
- Enable development and redevelopment
- Address “Safety” and “Noise”

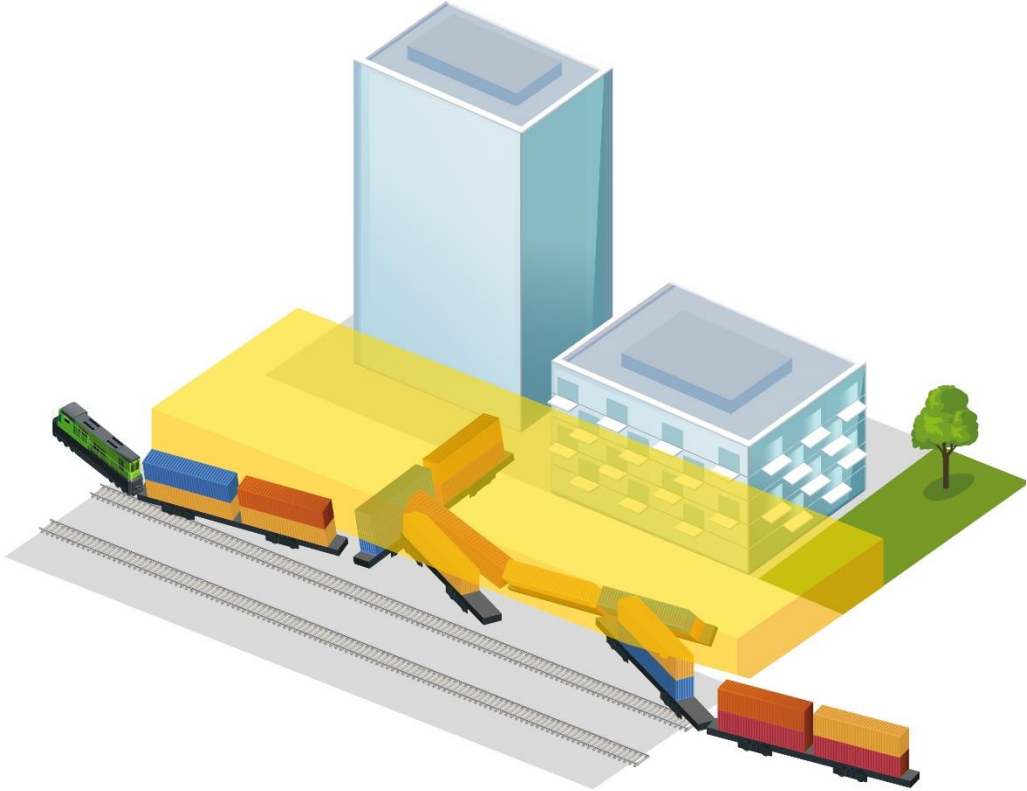
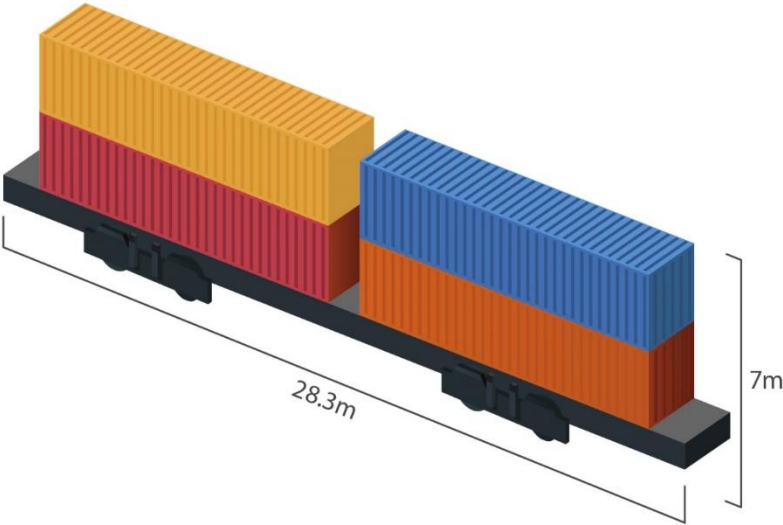
## Application of the Rail Policy

- Buildings and parcels within 30m (Rail Proximity Envelope)
- High Density Residential & Commercial Uses
- Sensitive Uses



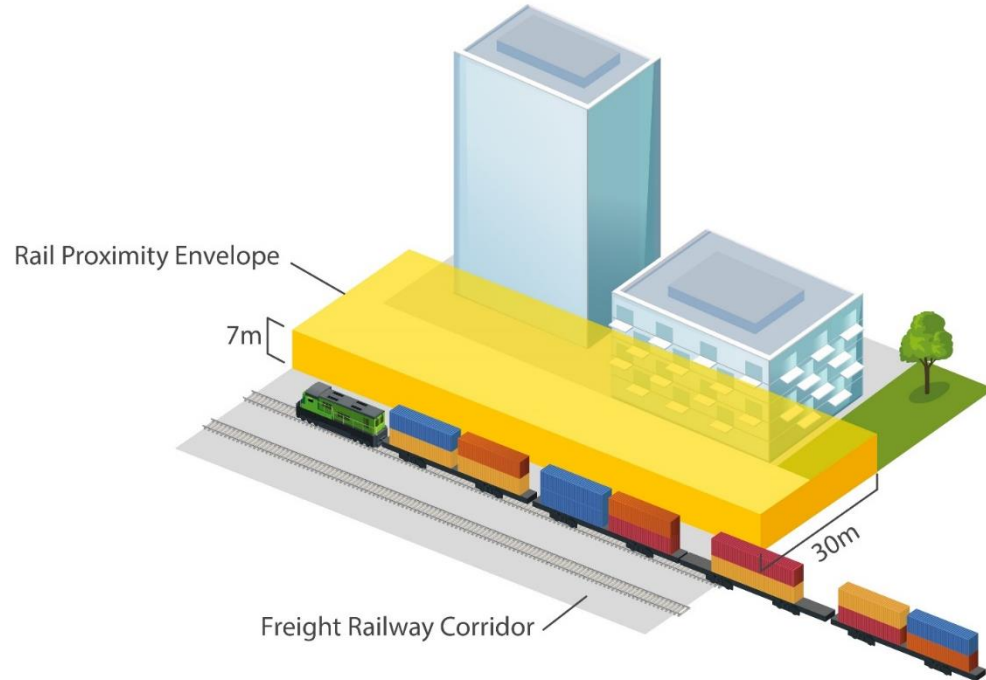


# How did we determine the Envelope



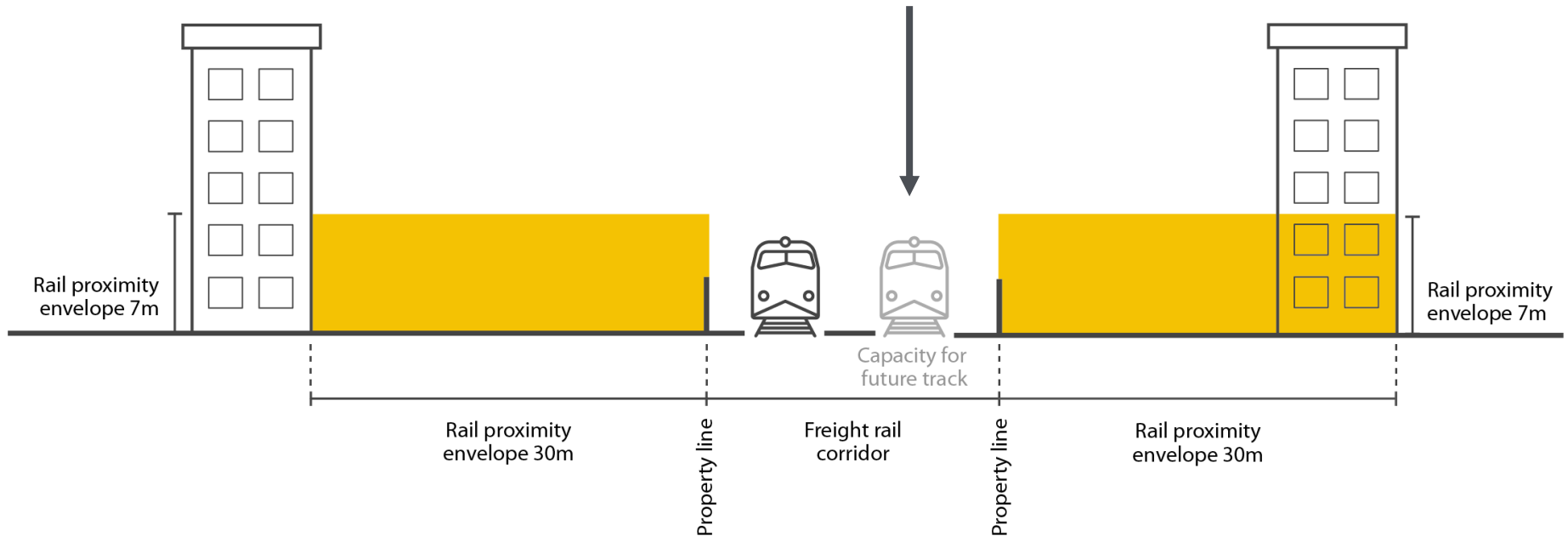
## Standard mitigation

- Limit building width
- Limit exposure to a moving hazard



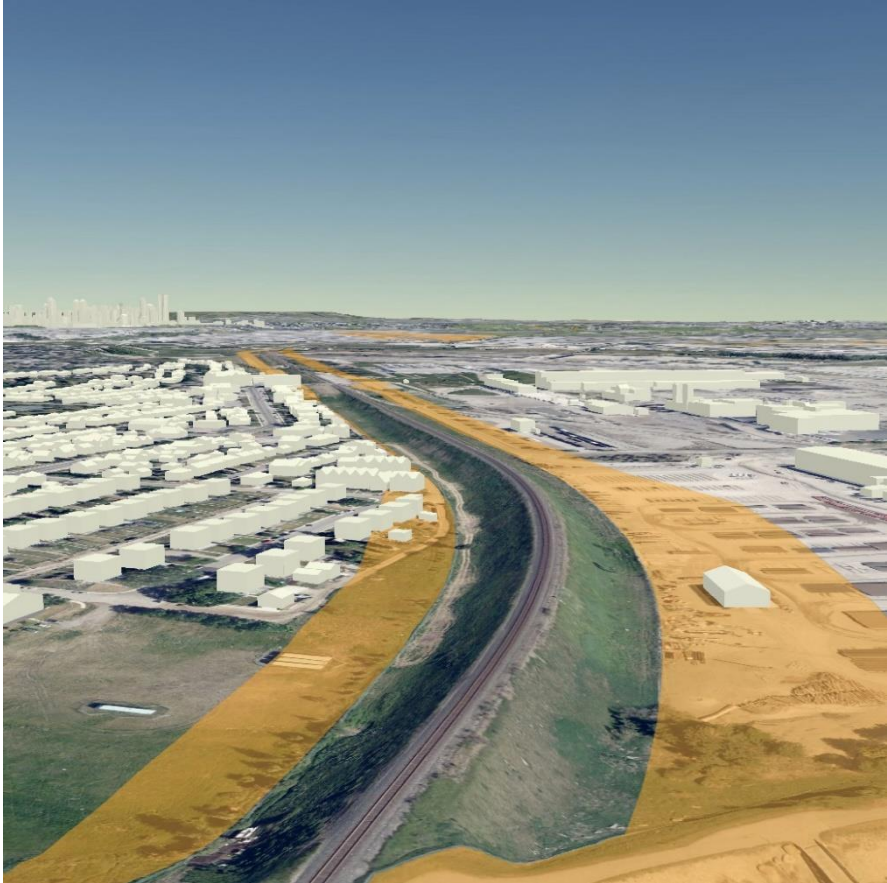
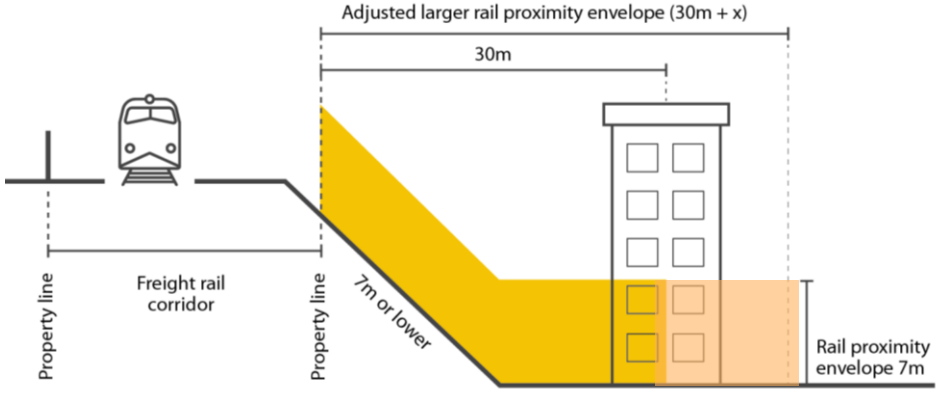


# Measuring Rail Proximity Envelope

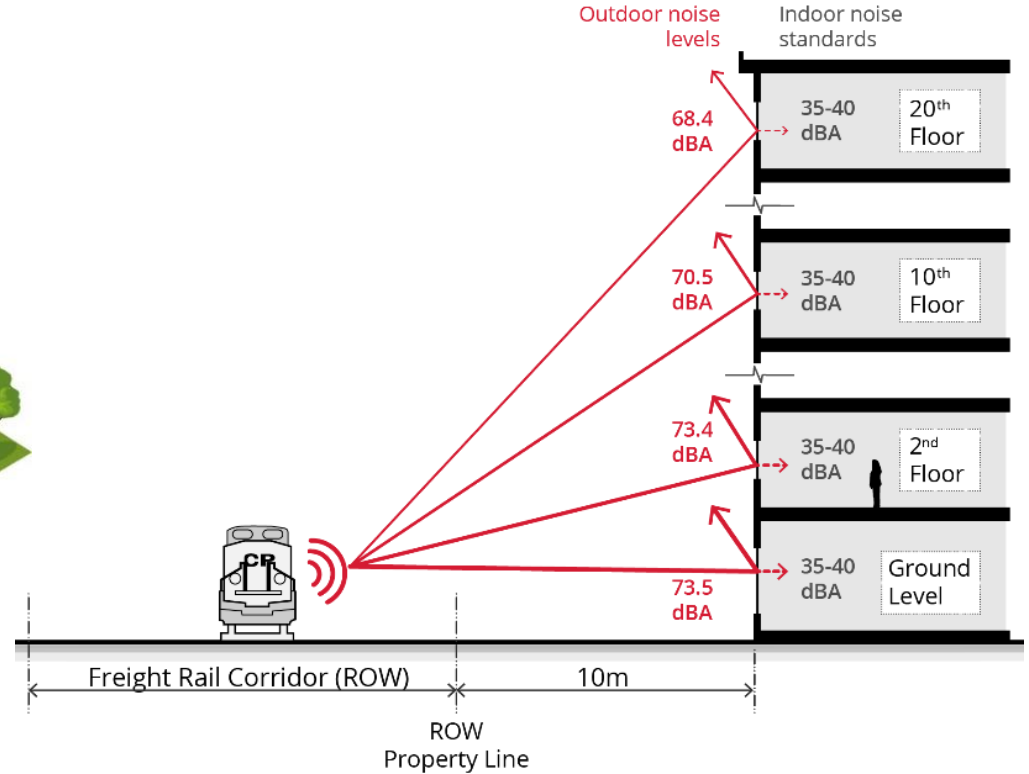
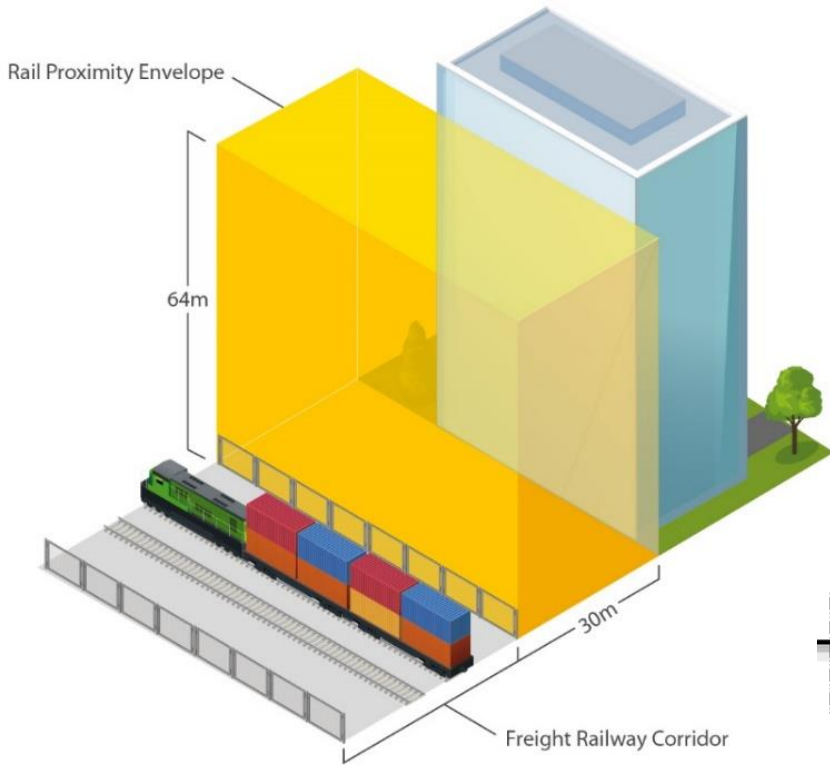




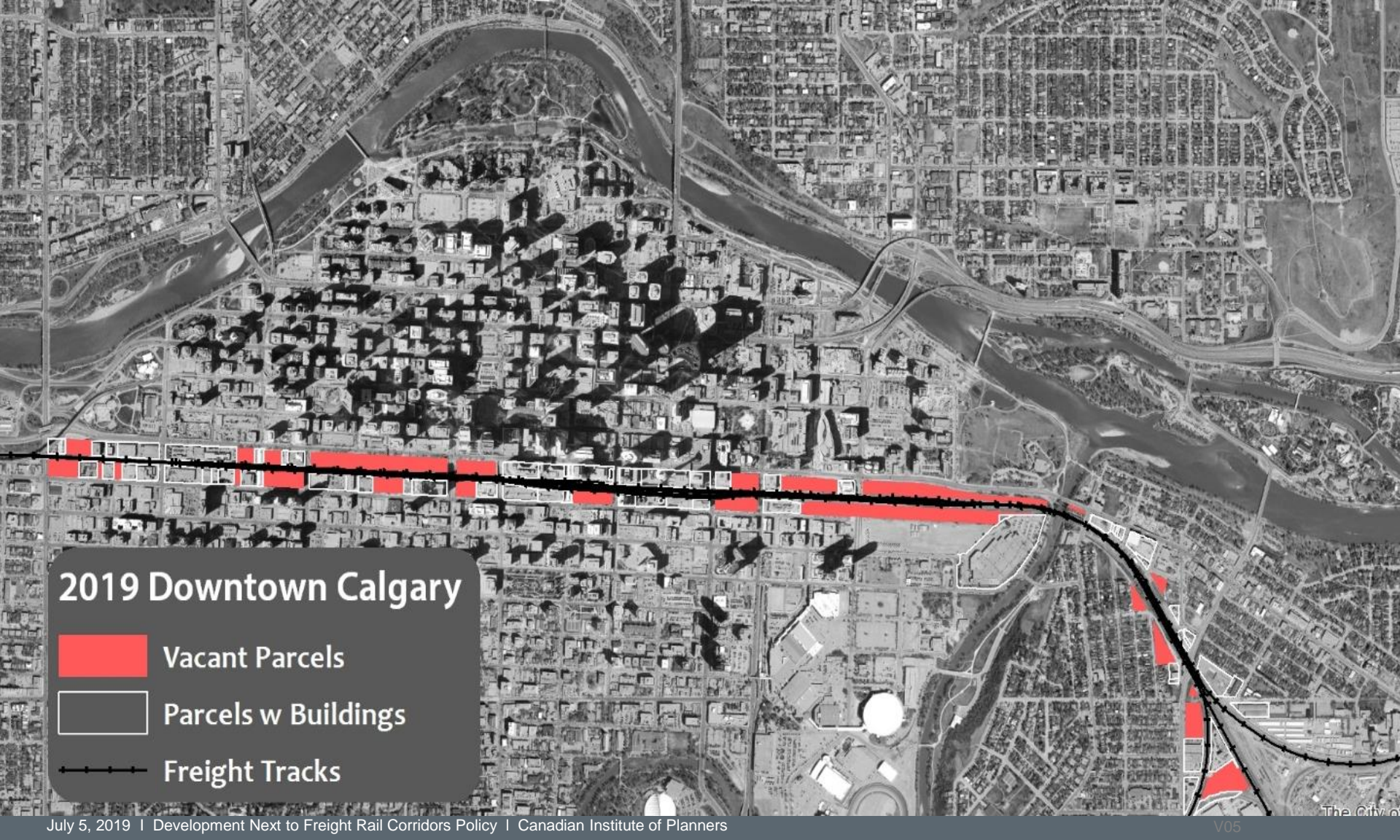
# Measuring Rail Proximity Envelope



# “Noise” Envelope







# 2019 Downtown Calgary

-  Vacant Parcels
-  Parcels w Buildings
-  Freight Tracks

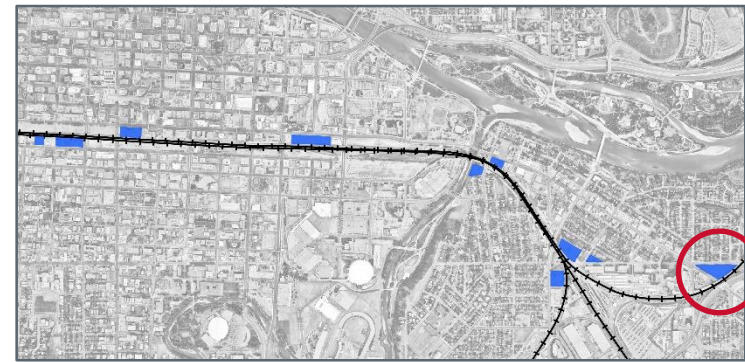






# Application Next to Rail - ①

## YWCA



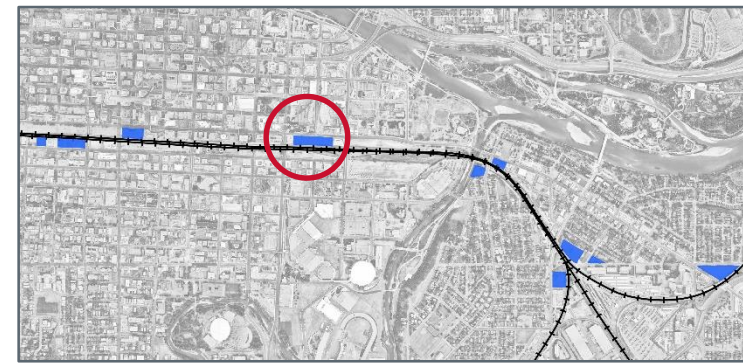
# Mitigation

- Push building away from track
- Measured from property line
- Parking at the back
- Locate low occupancy uses
  - Mechanical Room
  - Waste and Recycling
  - Washrooms
  - Parent visitation centre
- Noise mitigation

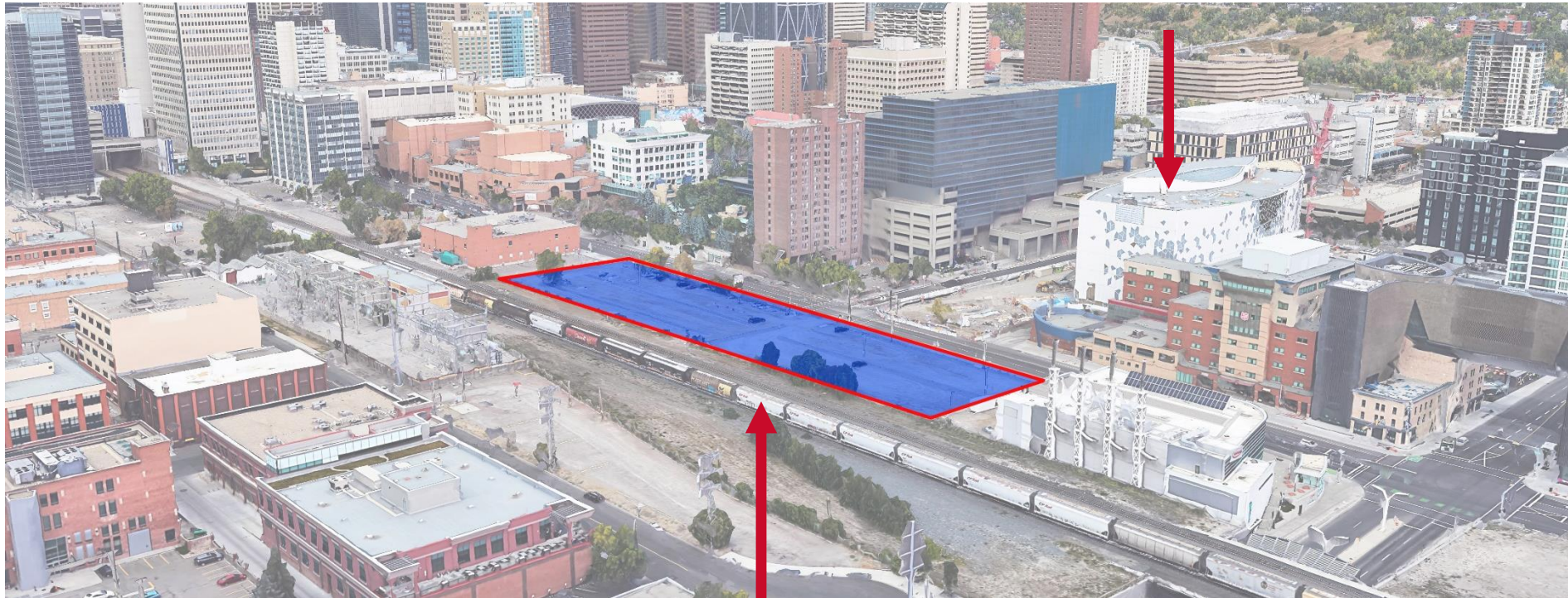




# Application Next to Rail - ②



## Parkade & Innovation Centre





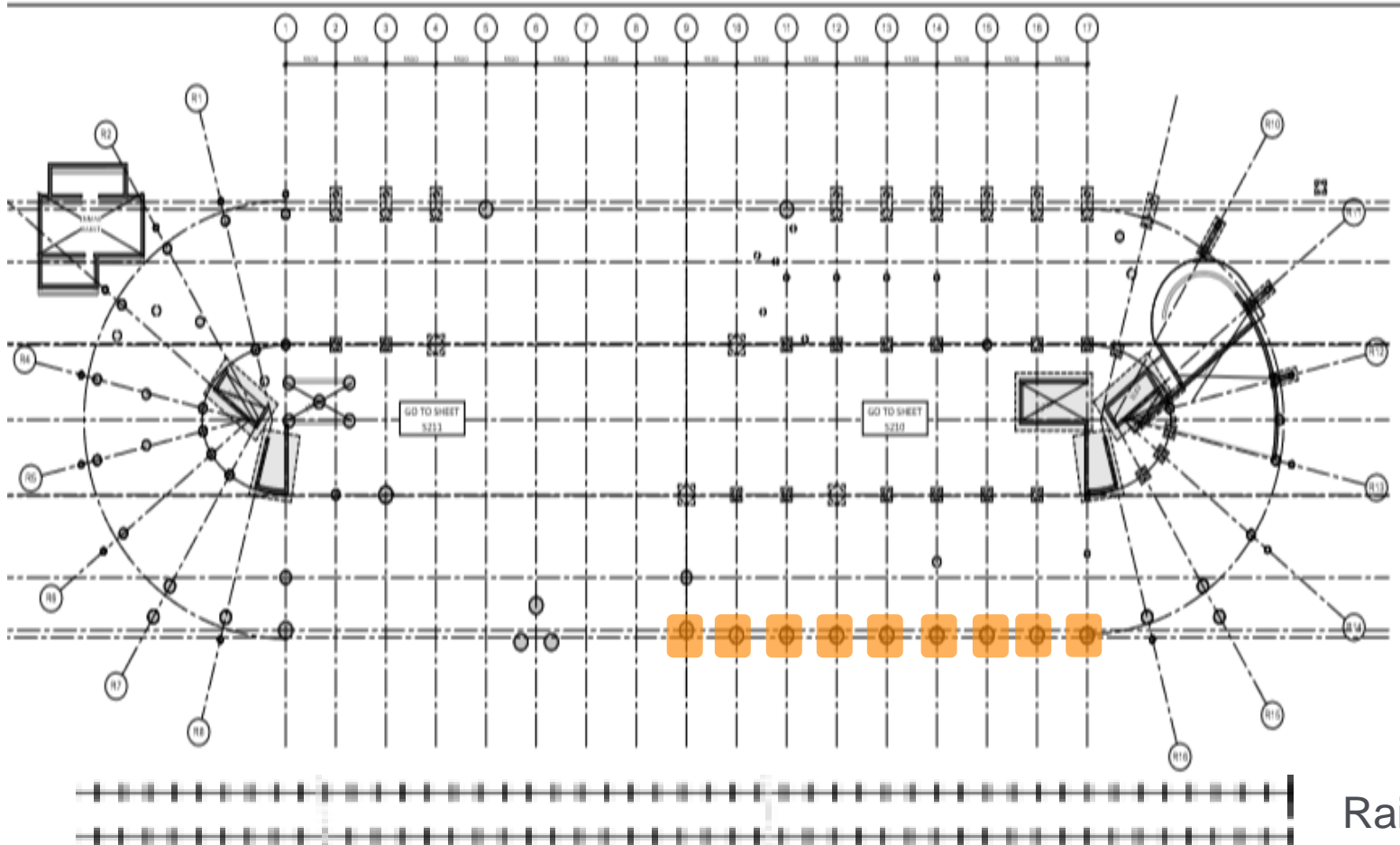


# Application Next to Rail - 2





# Application Next to Rail - 2

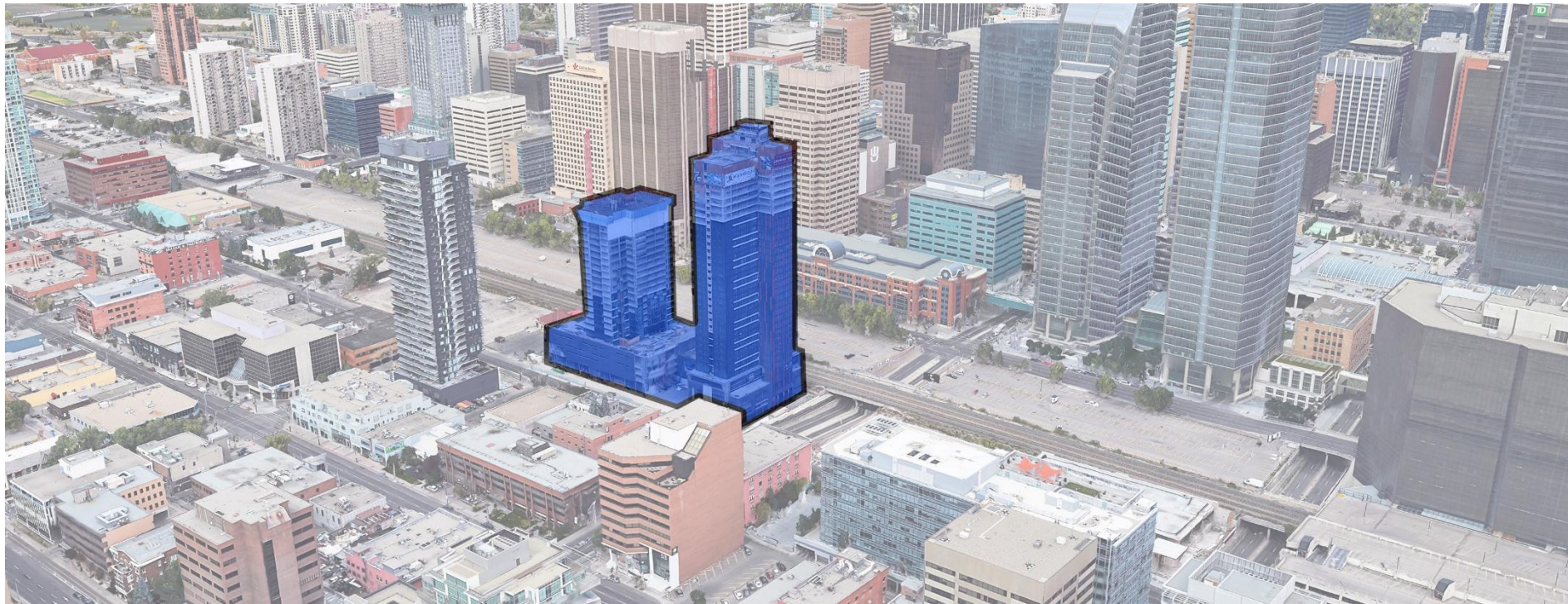
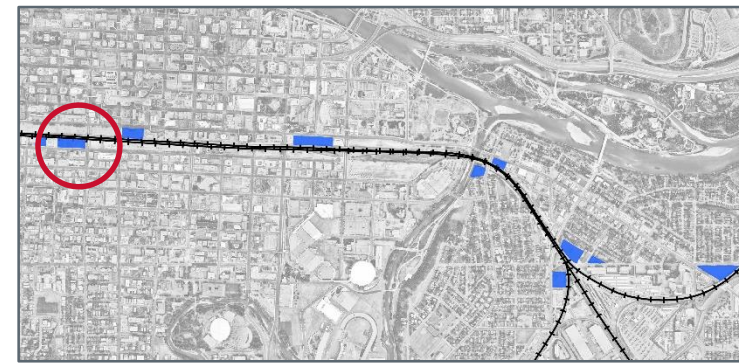


Rail Tracks



# Application Next to Rail - ③

## Marriot Residence Hotel & Sodo Residential







# Application Next to Rail - 4



## Mitigation

- Ductile column design (enhanced column protection)
- Driveway
- Parking
- Waste and recycling
- Loading bays
- Mechanical
- Noise mitigation







# Interactive map

Calgary

Development Next to Freight Rail Corridors Policy | Interactive Map

Find address or place

Layer List

- Parcels Adjacent to Rail Corridors
- Freight Track
- Freight Rail Corridor
- Rail Proximity Envelope (RPE) for Existing Buildings
- Rail Proximity Envelope (RPE) for New Buildings



# Interactive map

Development Next to Freight Rail Corridors Policy | Interactive Map

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(1 of 4)

Freight Rail Corridor Section Area: 1  
 Corridor Name: Leggan  
 Uses Allowed without Mitigation: High Density Uses  
 Maximum Building Width(metres) without Mitigation for High Density: 121  
 Maximum Use Width(metres) without Mitigation for Sensitive Uses: 35  
 Implementation Guide [More info](#)  
[Zoom to](#) ...





# Approval process

## Pre-Policy

- Perception of risk
- Required risk assessment
- No noise standards
- Rail data required
- Varied methodology & mitigation
- Rail proximity Envelope unknown

## Post Policy

- Actual risk identified
- Risk Assessment not required in most cases
- Noise standards established
- Rail data available
- Uniform methodology
- Stan mitigation
- Interactive map





## Benefit of the Policy

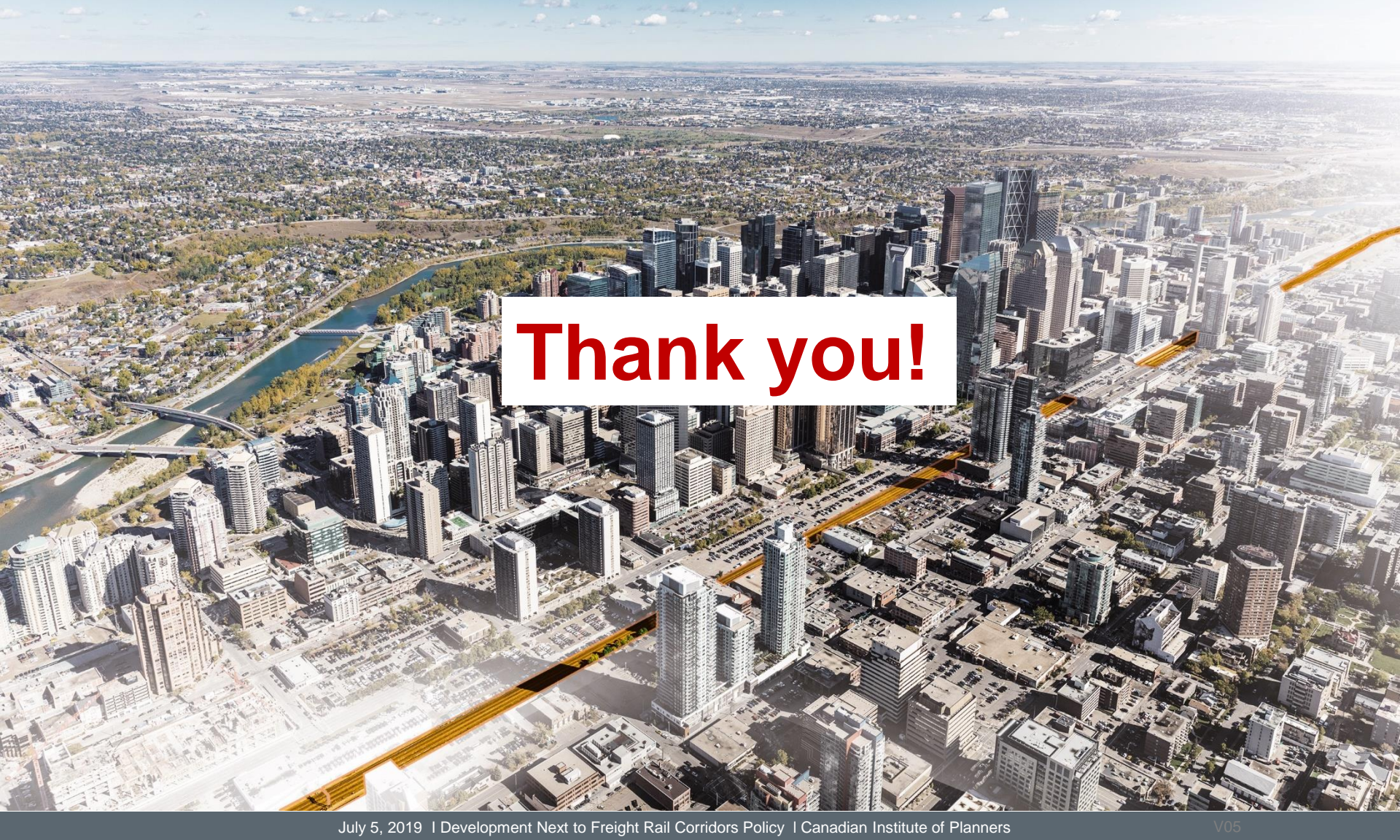
- Evidence based decision making
- Balance safety, quality of life & Development interest
- Meet growth target
- Create liveable environment (noise standards)
- Consistent risk management approach
- Protects assessed property values.
- Increases certainty
- Streamlined approval process
- Risk Assessment and Noise Study scope available
- Risk profile of parcels are known



## Lessons learned

- Understand the actual risk
- Understand the context of your city
- Address Safety separately from noise
- Consider how you will obtain expertise in risk & noise
- Rail infrastructure and urban development can be compatible





**Thank you!**