

# WE KNOW YOUR VOICE

We will work directly with you throughout the process to ensure your feedback is understood and considered. We will ensure that your feedback is directly reflected in the alternatives developed and share how public input influenced the decision.



## OPTIONS FOR ENGAGEMENT TODAY

### PARTICIPANTS WILL HAVE THE FOLLOWING ENGAGEMENT OPTIONS AT THE GBWWTP OPEN HOUSE

- Passive Engagement – Participants can look at panels and leave comments on Graffiti Boards
- One-on-One Engagement – Participants have the option of sharing their feedback directly with an EPCOR representative
- Facilitated Discussion – Participants can join a facilitated table discussion to provide input (discussion anticipated to take approximately 15 minutes)
  - Please sign up for a discussion at the welcome table (with new rounds starting every 30 minutes)



## PRIOR TO TODAY'S OPEN HOUSE - WORKSHOPS WITH REPRESENTATIVES FROM THE COMMUNITY AND STAKEHOLDER GROUPS

EPCOR works hard to be a good neighbour in the communities where we operate. That's why earlier this year, we reached out to the community and stakeholders around the Gold Bar Wastewater Treatment Plant (GBWWTP) to understand how we could better operate our facility and plan for future projects while still meeting the needs of the broader Edmonton population and Gold Bar's ongoing operations.

We organized a subcommittee of citizens called the Citizen Planning Committee (CPC) to take part in three community workshop sessions focused on engaging with participants on operations at the GBWWTP.

<b>Workshop 1 (February):</b>	<b>Workshop 2: (March)</b>	<b>Plant Tours (April/May):</b>	<b>Workshop 3 (May):</b>
<ul style="list-style-type: none"> <li>· Understand community values, issues, priorities</li> <li>· How they want to engage</li> <li>· Information needs</li> <li>· Overview of Operations</li> </ul>	<ul style="list-style-type: none"> <li>· Refined and ranked Shared Outcomes as a guide for activity at plant</li> <li>· Refined Community Engagement Framework to guide engagement for plant</li> </ul>	<ul style="list-style-type: none"> <li>· End to end facility tour</li> <li>· IRP context provided at stations during the tour</li> </ul>	<ul style="list-style-type: none"> <li>· Reviewed Design Principles to be included in the IRP</li> <li>· Four applied exercises: discussed options for projects and planning, applied the design principles as criteria for refining and selecting the preferred option</li> </ul>

## HOW WE PLAN FOR THE LONG TERM

ON AVERAGE, MORE THAN \$50 MILLION IN CAPITAL PROJECTS ARE UNDERTAKEN DURING EACH PERFORMANCE BASED REGULATION (PBR) PERIOD AT GOLD BAR WWTP FOR MAINTENANCE AND REHABILITATION. FOR THE 2017 – 2021 PERIOD, CITY COUNCIL APPROVED \$235 MILLION IN FUNDING FOR CAPITAL PROJECTS AT GOLD BAR.

### Integrated Resource Plan (IRP)

- Long term planning process (continuously updated)
- Considers traditional factors of forecasted demand and treatment capacity
- Considers external factors such as changing regulatory requirements, climate change, corporate goals, community values, and new technologies, etc.
- Addresses reliability and rehabilitation of existing assets
- Aligns current and future work to support achievement of 5 shared outcomes (quality of life; safety; relationship; environment; reliable, responsible, sustainable).



## OUR SHARED GOALS = SHARED OUTCOMES

WITH THE CITIZEN PLANNING COMMITTEE (CPC) WE ESTABLISHED THE FOLLOWING GOALS EPCOR AND THE COMMUNITY CAN COMMIT TO:

### QUALITY OF LIFE

The Gold Bar WWTP is operated, maintained and updated in a way that reduces impacts to stakeholders and improves quality of life, including odour, noise and enjoyment of parks and recreation.

### SAFETY

Community, public and worker safety and health are protected.

### RELATIONSHIP

An honest, transparent, trusting and respectful long-term relationship is developed between EPCOR and Gold Bar WWTP stakeholders.

### ENVIRONMENT

Pollution is prevented. The impact of the Gold Bar WWTP on air, land, water, climate and ecosystems is reduced.

### RELIABLE, RESPONSIBLE AND SUSTAINABLE

The Gold Bar WWTP is designed, maintained and operated in a prudent and responsible manner.

TELL US WHAT YOU THINK



# DESIGN PRINCIPLES : HOW WE WILL ACHIEVE OUR SHARED OUTCOMES TOGETHER

The Design Principles define how EPCOR will achieve the goals described in the five Shared Outcome Statements and provide a framework to guide the evolution of the site. They will be incorporated into the IRP.

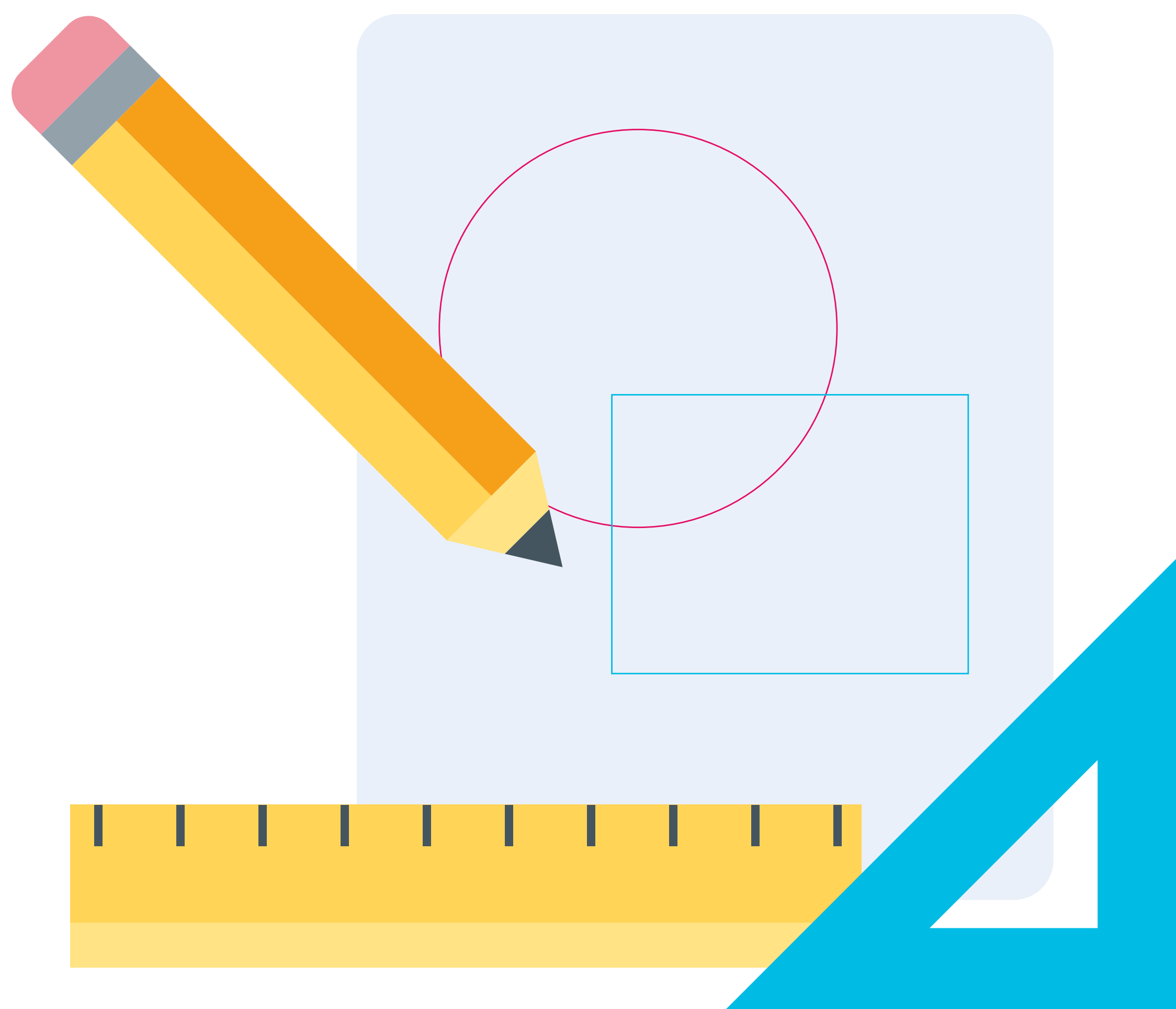
Shared Outcomes	QUALITY OF LIFE	SAFETY	RELATIONSHIP	ENVIRONMENT	RELIABLE, RESPONSIBLE, SUSTAINABLE
	Accelerate odour reduction	Continuously improve safety	Communicate openly	Continuously improve environmental performance	Continuously maintain reliable operations
	Remain within the existing fenceline	Ensure safe movement on-site	Align operating protocols	Reduce environmental impacts	Plan for a range of scenarios
Design Principles	Prevent increases to odour and noise	Improve worker hygiene and safety	Engage regularly	Increase resiliency	Prudently manage impacts to ratepayers
	Restore disturbed vegetation	Protect public safety from site-related traffic	Share options and optimize designs	Engage employees and stakeholders	
	Mitigate temporary impacts				

TELL US WHAT YOU THINK

## DESIGN PRINCIPLES

The IRP and its projects are implemented by many teams working over multiple decades. In planning for the future, and in implementing individual projects, EPCOR has identified twenty Design Principles that will guide the ongoing work of staff and contractors. These Design Principles define how EPCOR will achieve the goals and priority actions described in the five Outcome Statements, and provide a framework to guide the evolution of the site. The objective of planners and project managers will be to deliver all process and non-process work at the site within these Design Principles, and to engage with stakeholders and regulators to explore options and trade-offs.

EPCOR seeks to implement high quality public engagement programs that result in critical infrastructure being permitted, built, and operated in a way that is aligned with the interests and priorities of the community and meets the needs of the broader society. The Design Principles document EPCOR's commitments to stakeholders, clarify expectations for EPCOR's teams now and in the future, and provide stakeholders and EPCOR with criteria against which individual projects and design decisions can be tested.



## SHARED OUTCOME AND DESIGN PRINCIPLES: QUALITY OF LIFE

### QUALITY OF LIFE

Gold Bar WWTP is operated, maintained and updated, in a way that reduces impacts to stakeholders and improves quality of life, including odour, noise and enjoyment of parks and recreation today and into the future.

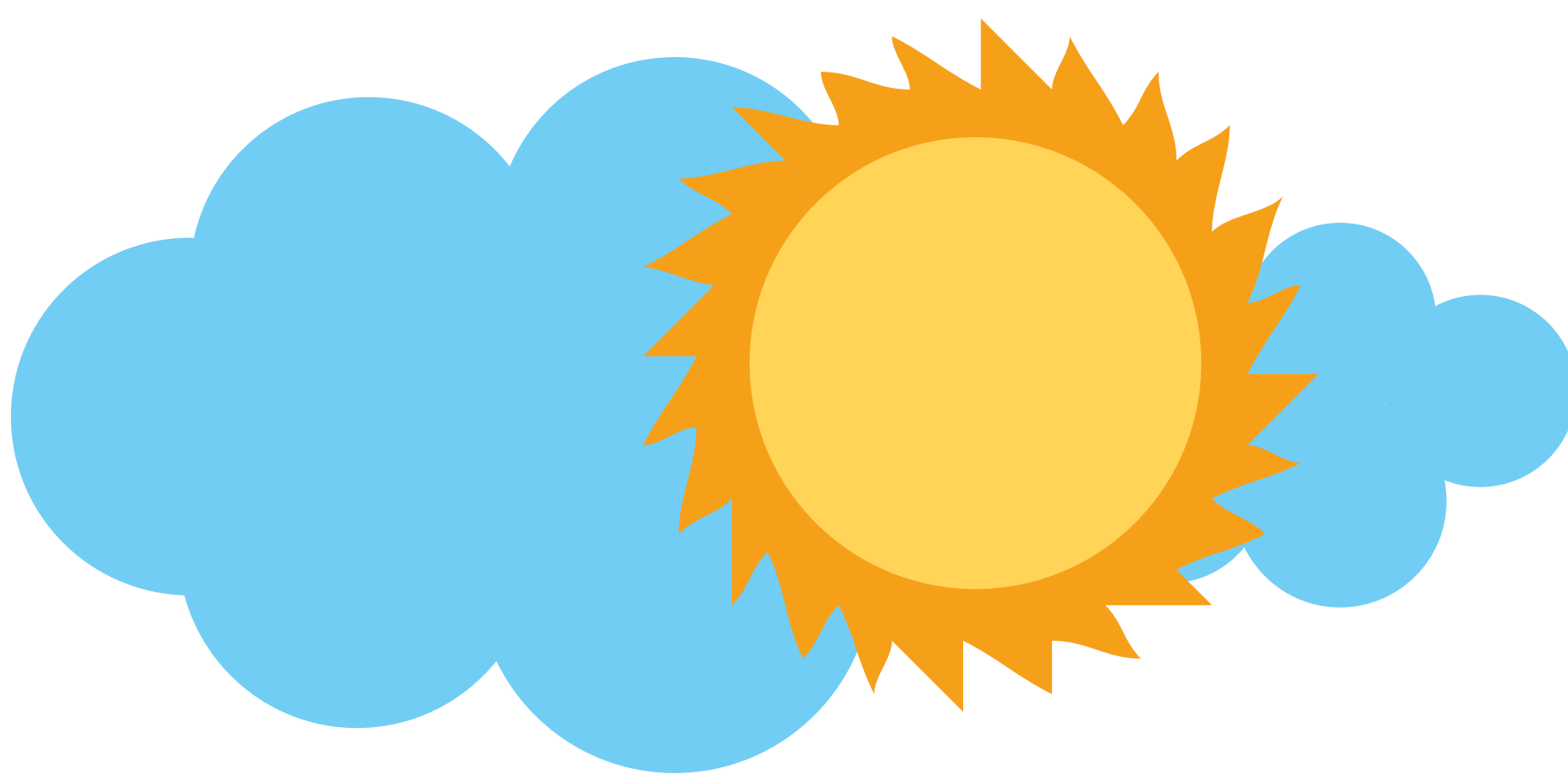
### Design Principles

In its long-term plans, individual projects, and ongoing operations at Gold Bar WWTP, EPCOR will:

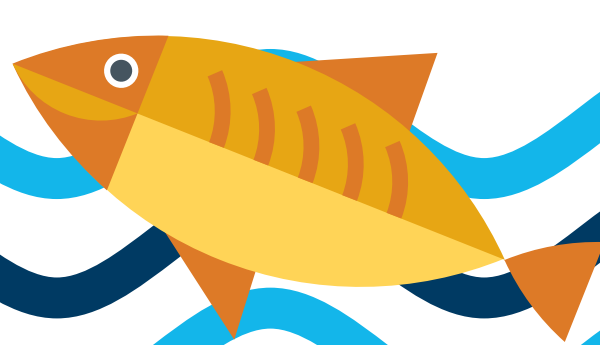
1. Accelerate odour reduction. Identify and accelerate capital and operating initiatives that reduce odour from existing operations, and meet current and future odour performance standards.
2. Remain within the existing fenceline. Design Gold Bar WWTP to eliminate, offset, mitigate or reduce impacts to adjacent parkland (in that order of preference).

The design of all process and non-process facilities at Gold Bar WWTP will be undertaken with the objective of keeping the facility within its existing fenceline.

3. Prevent increases to odour and noise. Design the facility to be able to handle future volume changes without increases in odour or noise.
4. Restore disturbed vegetation. Develop and implement a policy to re-naturalize or replace trees and vegetation that are disrupted by utility work.
5. Mitigate temporary impacts. Minimize or mitigate temporary impacts from construction and maintenance activities, including any temporary impacts that occur from work outside the fenceline.



TELL US WHAT YOU THINK





# SHARED OUTCOME AND DESIGN PRINCIPLES: SAFETY

## SAFETY

Community, public and worker safety and health are protected.

### Design Principles

In its long-term plans, individual projects, and ongoing operations at the Gold Bar WWTP, EPCOR will:

6. Continuously improve safety. Assess current safety performance, evolving standards and emerging risks, and propose initiatives that maintain regulatory compliance, improve safety, and provide information to the community.
7. Ensure safe movement on-site. Develop a plan for on-site vehicle, people movement, and parking, that improves worker and visitor safety.
8. Improve worker hygiene and safety. Develop a plan for the location of non-process buildings and hygiene facilities that improves worker safety and limits health risks

The design of all process and non-process facilities at Gold Bar WWTP will be undertaken with the objective of keeping the facility within its existing fenceline. EPCOR will minimize or mitigate temporary impacts from construction.

9. Protect public safety from site-related traffic. Consider the individual and cumulative transportation impacts from construction and maintenance activities, and develop plans to protect public safety on Gold Bar Park Road and 50th Street



## SHARED OUTCOME AND DESIGN PRINCIPLES: RELATIONSHIP

### RELATIONSHIP

An honest, transparent, trusting and respectful long-term relationship is developed between EPCOR and Gold Bar WWTP stakeholders.

### Design Principles

In its long-term plans, individual projects, and ongoing operations at the Gold Bar WWTP, EPCOR will:

10. Communicate openly. Make timely, open, complete and transparent communication about planning and development at Gold Bar WWTP.
11. Align operating protocols. Update internal operating procedures at Gold Bar WWTP to implement the communication protocols agreed to with the community.
12. Engage regularly. Periodically engage with stakeholders to review and refresh the communication protocols and products used to share operations and project information with stakeholders (including employees), and the channels that stakeholders use to provide information to Gold Bar WWTP.
13. Share options and optimize designs. Share design criteria and options for significant projects, and for projects that could impact quality of life for stakeholders, and use stakeholder input to improve and finalize project design and option selection.



# SHARED OUTCOME AND DESIGN PRINCIPLES: RELIABLE, RESPONSIBLE AND SUSTAINABLE

## RELIABLE, RESPONSIBLE AND SUSTAINABLE

The Gold Bar WWTP is designed, maintained and operated in a prudent and responsible manner.

### Design Principles

In its long-term plans, individual projects, and ongoing operations at the Gold Bar WWTP, EPCOR will:

14. Continuously improve environmental performance. Assess current environmental performance, evolving standards and emerging risks, and propose initiatives that maintain regulatory compliance and improve environmental performance
15. Reduce environmental impacts. Prioritize investments and operating practice changes that reduce the Gold Bar WWTP's environmental impact, with a focus on contributing to the reduction of global greenhouse gas emissions, the protection of water quality, the protection of parkland, and the recovery of resources.
16. Increase resiliency. Protect the community from the impacts of extreme weather and climate change by implementing measures to make the Gold Bar WWTP more resilient against overland and river flooding.
17. Engage employees and stakeholders. Involve and encourage the participation of employees and stakeholders in the improvement of our health, safety and environmental performance.



TELL US WHAT YOU THINK

## SHARED OUTCOME AND DESIGN PRINCIPLES: ENVIRONMENT

### ENVIRONMENT

Pollution is prevented. The impact of the Gold Bar WWTP on air, land, water, climate and ecosystems is reduced.

### Design Principles

In its long-term plans, individual projects, and ongoing operations at Gold Bar WWTP, EPCOR will:

18. Continuously maintain reliable operations. Incorporate condition assessments of current facilities, and identify the work required to rehabilitate or maintain infrastructure.
19. Plan for a range of scenarios. Conduct scenario planning to identify the range of work that would be required to serve future populations under changing regulatory and climate conditions.
20. Prudently manage impacts to ratepayers. Develop options that result in reasonable costs for ratepayers, and which spread the rate impacts of investment over time.



TELL US WHAT YOU THINK

LET US KNOW WHAT YOU THINK OF OUR PROPOSED SHARED OUTCOMES, PRIORITY ACTIONS AND DESIGN PRINCIPLES BY LEAVING US YOUR COMMENTS. WHAT DO YOU LIKE? WHERE DO YOU THINK THERE'S ROOM FOR IMPROVEMENT? ARE WE MISSING ANYTHING?

SHARED OUTCOMES	PRIORITY ACTIONS	DESIGN PRINCIPLES

TELL US WHAT YOU THINK

# PUBLIC ENGAGEMENT FRAMEWORK: HOW EPCOR WILL INTERACT WITH THE COMMUNITY ON PROJECTS AND OPERATIONS AT GBWWTP

Through collaboration, EPCOR and the CPC created the following spectrum to guide public engagement for operations and planned work at Gold Bar Wastewater Treatment Plant.

Communication will be an important component for all levels of engagement					
	Public Engagement				
	Communications (Inform, listen and Learn)—will be an important component for all levels of Engagement	Advise (Share info)	Refine (Work together and build a plan)	Create (Work side by side and build a shared plan)	Decide (You decide)
EPCOR's Commitment	<ul style="list-style-type: none"> <li>- We will keep you informed</li> <li>- We will respond in a timely manner and resolve issues</li> <li>- We will ensure the safety of residents through the dissemination of information about possible danger and emergency response procedures</li> <li>- We will inform the community about activities at the site that have impacts on traffic, noise, etc.</li> </ul>	<p>We will listen to and acknowledge concerns and aspirations and share how public input (if received) influenced the decision.</p>	<p>We will work <b>directly with you throughout the process</b> to ensure your feedback is understood and considered.</p> <p>We will ensure that your feedback is <b>directly reflected in the alternatives</b> developed and share how the public input influenced the decision.</p>	<p>We will partner with you in each aspect of the decision including the <b>development of alternatives and identification of the preferred solution.</b></p> <p>We will look to you for <b>advice and information in formulating solution and incorporate</b> your advice into the decisions to the <b>maximum extent possible.</b></p>	<p>We will place <b>final decision making</b> in your hands. We will implement what you decide.</p>
Why	<p>To provide you with information to assist you in understanding the problem, alternatives, opportunities and/or solutions. This will also be a mutually satisfactory process for identifying, investigating and responding to complaints and concerns regarding operations.</p>	<p>To assist you in understanding what we do and why we are doing it. Flag any concerns prior and consider them in the plan.</p>	<p>To obtain your input on problems, alternatives, opportunities and/or solutions.</p>	<p>To obtain your input on every aspect of the work and involve you in complex discussions that may impact your community.</p>	<p>To have you lead on community initiatives.</p>
When	<p>Before and at the beginning of ongoing operations, projects, long-range planning, and operational issues (e.g. odour reporting on website, increased traffic, unplanned maintenance issue leading to odours).</p>	<p>During ongoing operations, and for small, low-impact projects (e.g. crane on site, planned maintenance work leading to odours).</p>	<p>For medium-impact projects, long-range planning and one-off operational issues (e.g. odour monitoring - location of equipment, planned work outside fenceline leading to trail closure in summer for 2 weeks).</p>	<p>For major stakeholder impacts related to multiple shared outcomes. An example may be perimeter signage (e.g. review perimeter signage - safety and interpretive in nature).</p>	<p>For community based projects (e.g. New MT bike trail through GB land).</p>
How (Suggested Techniques)	<ul style="list-style-type: none"> <li>- Newsletters</li> <li>- Social Media</li> <li>- Interviews</li> <li>- Websites</li> <li>- Community Newspapers</li> <li>- Signs in Gold Bar Park</li> <li>- Facility Tour</li> <li>- Through partners (e.g. community leagues)</li> </ul>	<ul style="list-style-type: none"> <li>- Survey</li> <li>- Newsletters</li> <li>- Social Media</li> <li>- Interviews</li> <li>- Websites</li> <li>- Focus Groups</li> <li>- Open House</li> <li>- Signs in gold bar park</li> <li>- Community Liasion Committee (CLC)</li> <li>- Community Newspaper</li> </ul>	<ul style="list-style-type: none"> <li>- Survey</li> <li>- Interviews</li> <li>- Focus Groups</li> <li>- Online Engagement</li> <li>- Open House</li> <li>- Workshop</li> <li>- Pop-up engagement in Gold Bar Park</li> <li>- Community Liasion Committee (CLC)</li> </ul>	<ul style="list-style-type: none"> <li>- Workshop</li> <li>- Drop-in Engagement</li> <li>- Community Liasion Committee (CLC)</li> </ul>	<ul style="list-style-type: none"> <li>- Workshop</li> <li>- Drop-in Engagement</li> <li>- Community Liasion Committee (CLC)</li> </ul>

LET US KNOW WHAT YOU THINK OF OUR PROPOSED PUBLIC ENGAGEMENT FRAMEWORK BY LEAVING US YOUR COMMENTS. WHAT DO YOU LIKE? WHERE DO YOU THINK THERE'S ROOM FOR IMPROVEMENT?

COMMUNICATIONS	ADVISE	REFINE	CREATE	DECIDE

TELL US WHAT YOU THINK

## INTERESTED IN ADVISING EPCOR ON A COMMITTEE GOING FORWARD? EPCOR'S COMMUNITY LIAISON COMMITTEE (CLC)

- EPCOR has operated a Community Liaison Committee (CLC) specific to the ongoing operations of the GBWWTP for over ten years.
- EPCOR is currently recruiting for the 2019-2020 Community Liaison Committee (CLC) term.
- The CLC provides an opportunity for members to learn and provide feedback regarding EPCOR's provision of reliable and high-quality water and wastewater services. The CLC is a very important link to the communities surrounding the GBWWTP.
- The CLC is comprised of 10-15 volunteers and meets several times a year. We ask members to sit on the committee for two years.
- The community leagues and heavy-use recreational groups located near the GBWWTP have already put forward representatives to participate in the CLC.
- We still have two spots available on the CLC, please let an EPCOR representative at the open house know if you are interested in joining.
- The new CLC term (2019-2021) will have their first kick-off meeting in September 2019.





# DISCUSSING LONG-TERM PLANNING SCENARIOS

## HOW DO YOU DESIGN, MAINTAIN AND OPERATE THE PLANT IN A PRUDENT MANNER?

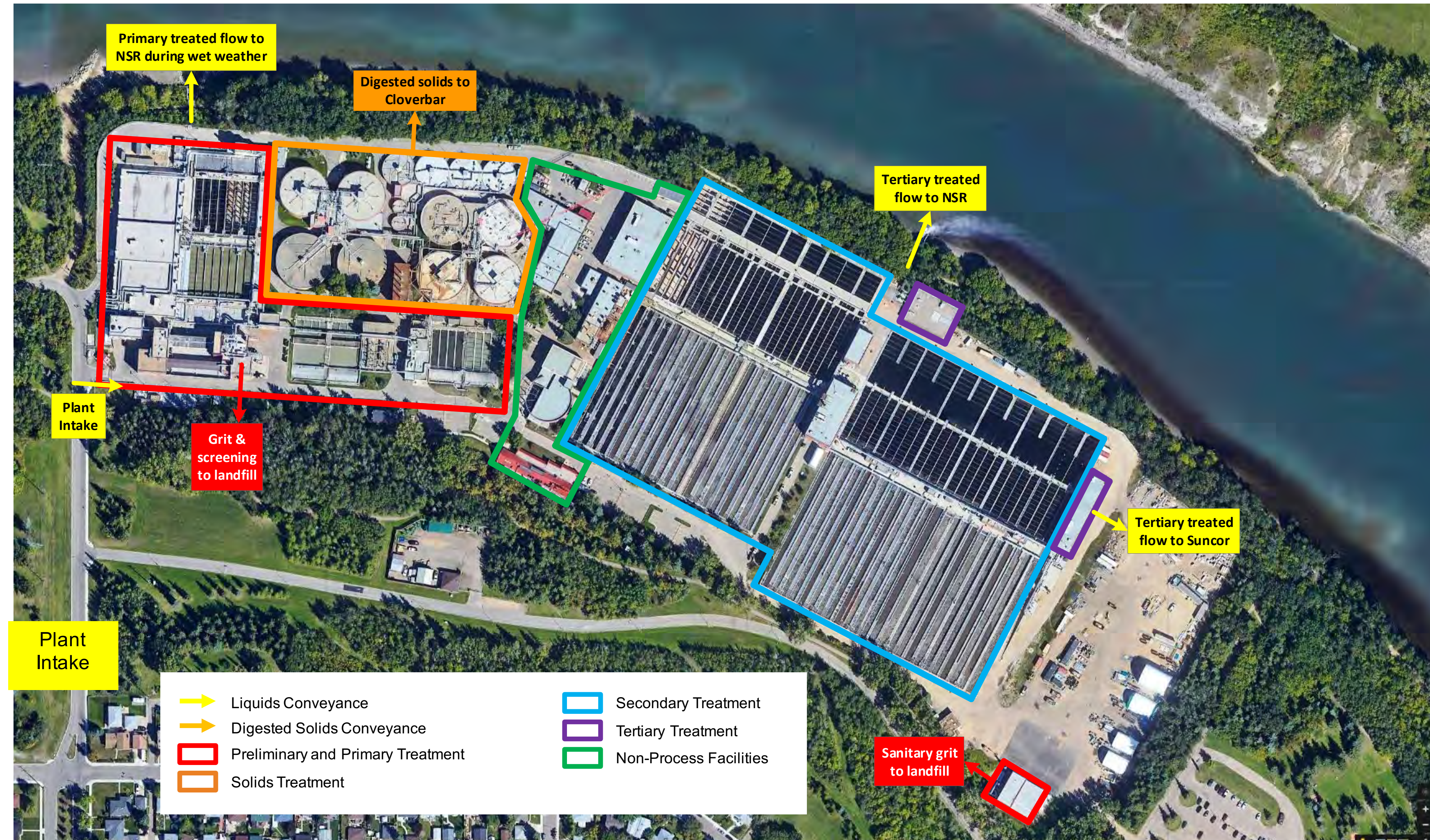
### DEFINE THE GOAL

The Gold Bar WWTP is designed, maintained and operated in a prudent and responsible manner.

1. Gold Bar WWTP will meet or exceed regulated performance requirements, now and in the future.
2. Gold Bar WWTP will be maintained in good working order, and demonstrate sustainable and reliable operation.
3. Capital and operating costs will be prudent, giving consideration to the impact on ratepayers.
4. Gold Bar WWTP will be designed and operated in a way that mitigates its impact on the community.



PLANT OVERVIEW – KEY COMPONENTS



• For the 2017 – 2021 period, City Council approved \$235 million in funding for capital projects at the Gold Bar WWTP.

- About \$50 million in capital projects are undertaken during each PBR period for maintenance and rehabilitation.
- This level of capital expenditure is expected to continue for the foreseeable future.

• Most investment at Gold Bar is reliability driven – maintaining / replacing assets to ensure safe and reliable operation of the plant.

- As assets are rehabilitated or replaced as they approach end of life, there is often positive impact on the ability of the plant to treat wastewater. This reduces the need to expand the footprint of the plant.

## KEY VARIABLES FOR PLANNING

### Drivers

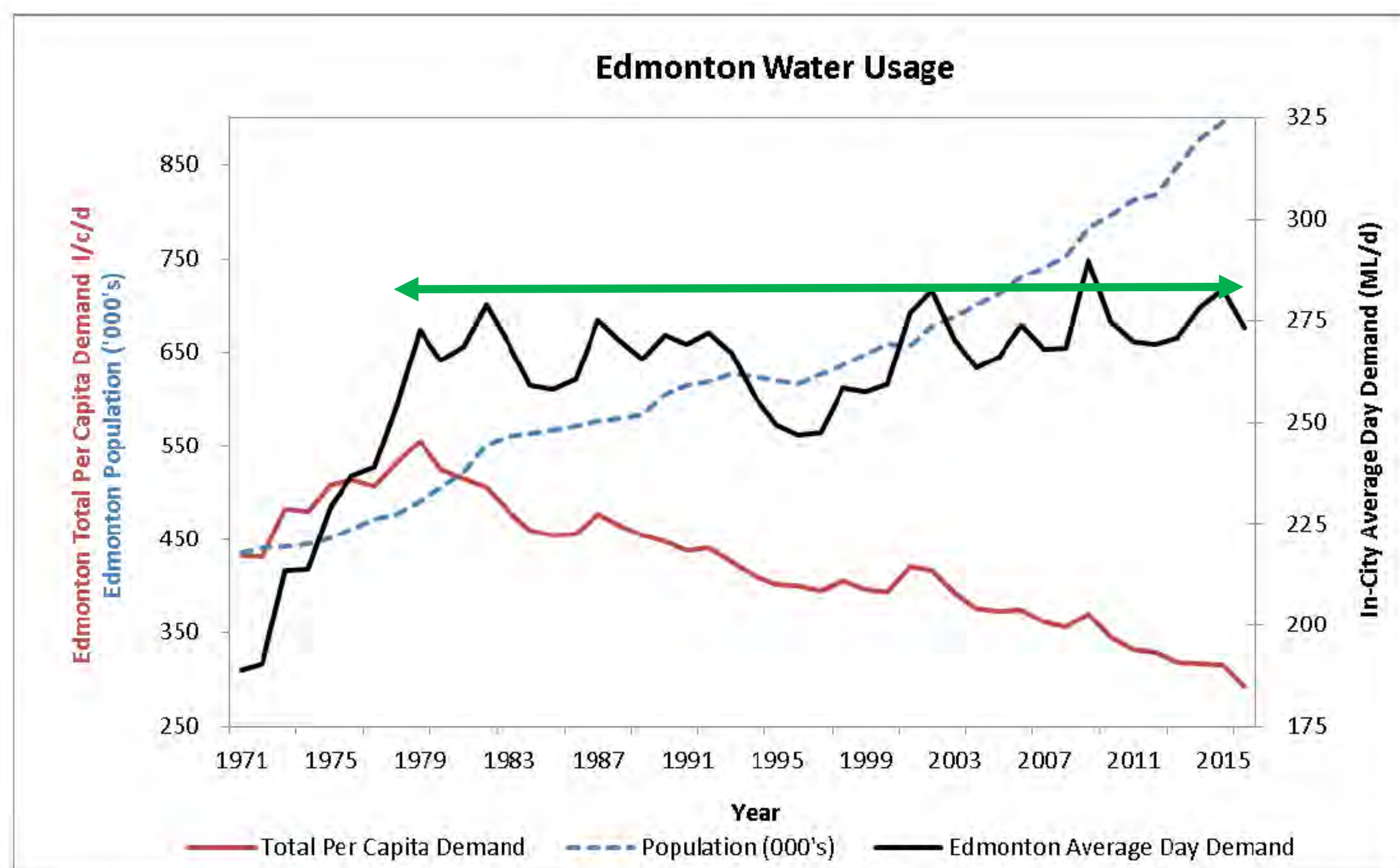
- **Population Growth:** The rate of growth is the primary driver of volume changes
- **Water Conservation:** Declining per person water consumption

### Impacts

- **Loadings (solids, organics, nutrients)** coming to the plant grow in proportion to population
- **Liquid flows** to the plant are not growing as fast as overall population growth due to the offsetting effects of water conservation
- As a result, the wastewater coming to the plant is expected to **increase in strength** (be more concentrated) over time

## GROWTH AND WATER CONSERVATION

**Total water usage in Edmonton has been essentially flat over the last 40 years** as the impact of population growth has been offset by a systematic decline in per capita water consumption.



## OTHER PLANNING VARIABLES AND UNCERTAINTIES

- **Growth**

- Higher or lower than expected growth from residential and industrial clients will shift the date at which secondary treatment technology needs to be changed (as early as 2027 or later).

- **Loading**

- Disruptive trends in human consumption and waste generation will impact the planning process and timeline for future improvements.
- For example, it is uncertain when the water conservation measures will normalize allowing flows to increase proportionately with growth again.

- **Regulatory Evolution**

- Environmental regulations have become progressively rigorous with awareness and are expected to continue. This will significantly influence the timeline of required improvements.

- **Climate Change**

- Changes in weather and rainfall pattern have significant impacts on wastewater treatment strategy, primarily because of the combined sewer system in Edmonton.

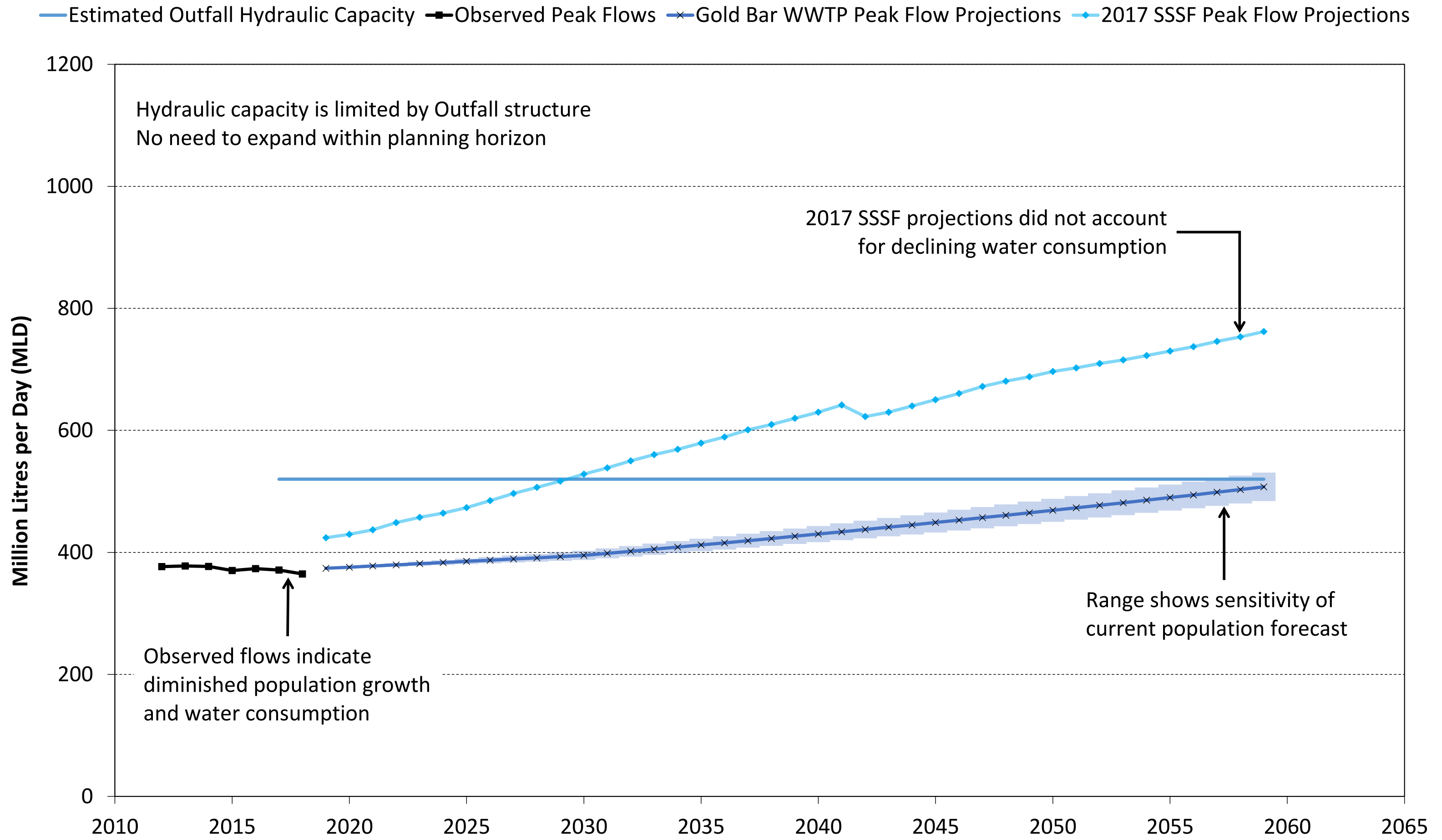
- **New Technologies**

- Application of new technologies will allow us to improve performance while maintaining or reducing physical footprint, recover energy and resources from wastewater (Biogas, Biosolids, Nutrients, Treated water, etc.) and improve environmental sustainability.

### FLOW : LIQUID CONVEYANCE CAPACITY

Actual liquid flows to Gold Bar (solid black line) have been flat due to water conservation measures. EPCOR expects growth in future Liquid Flows to be modest – far less than the 2017 ISL estimates used by the SSSF.

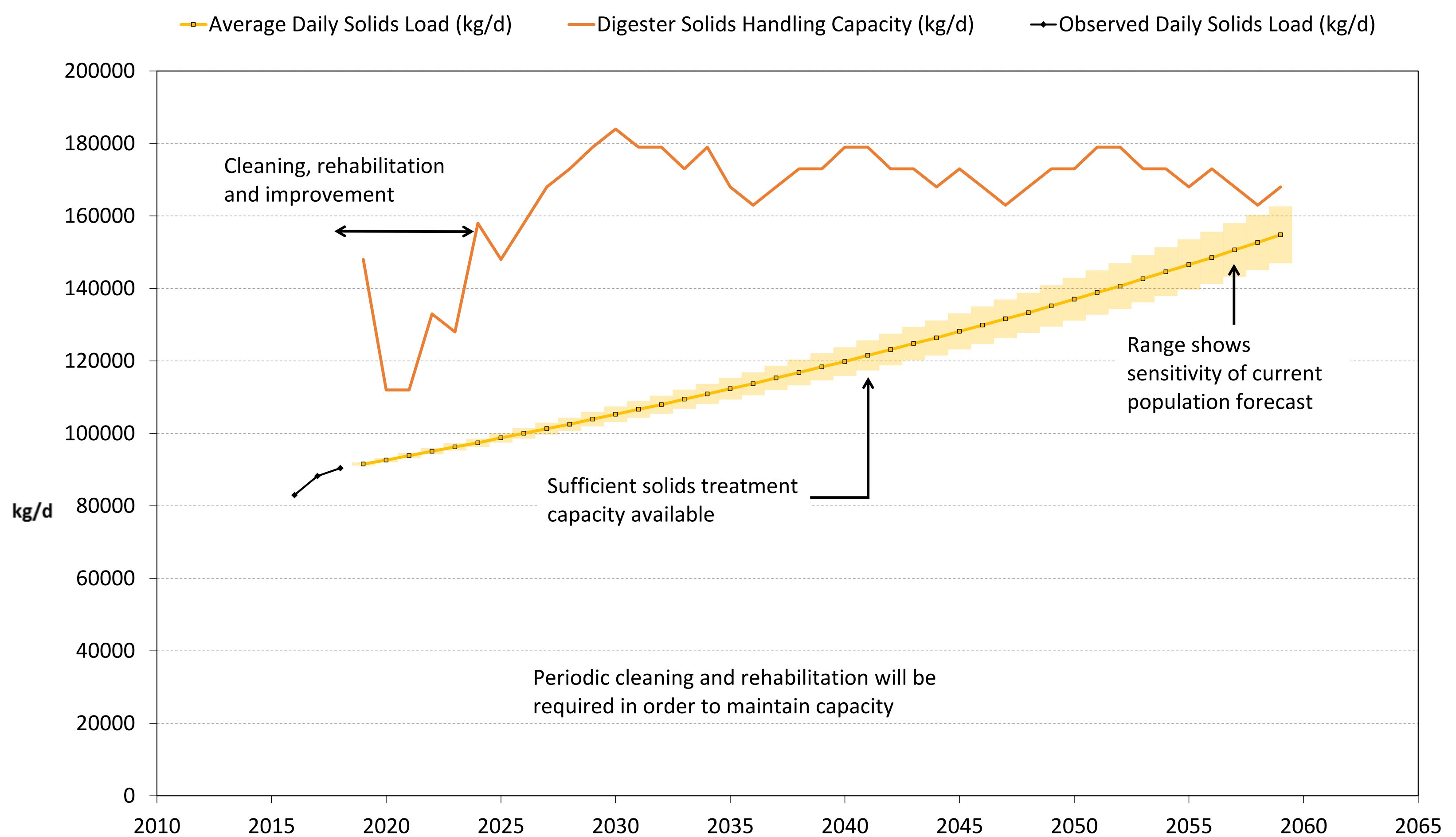
**Conclusion: Gold Bar WWTP has adequate hydraulic capacity to handle flows through 2060 and possibly longer within the plant’s footprint.**



### FLOW: SOLIDS TREATMENT CAPACITY

**Conclusion: Gold Bar WWTP has spare solids treatment capacity through 2060 and longer.**

**Gold Bar WWTP Solids Treatment Capacity**



# FLOW: NUTRIENT REMOVAL CAPACITY

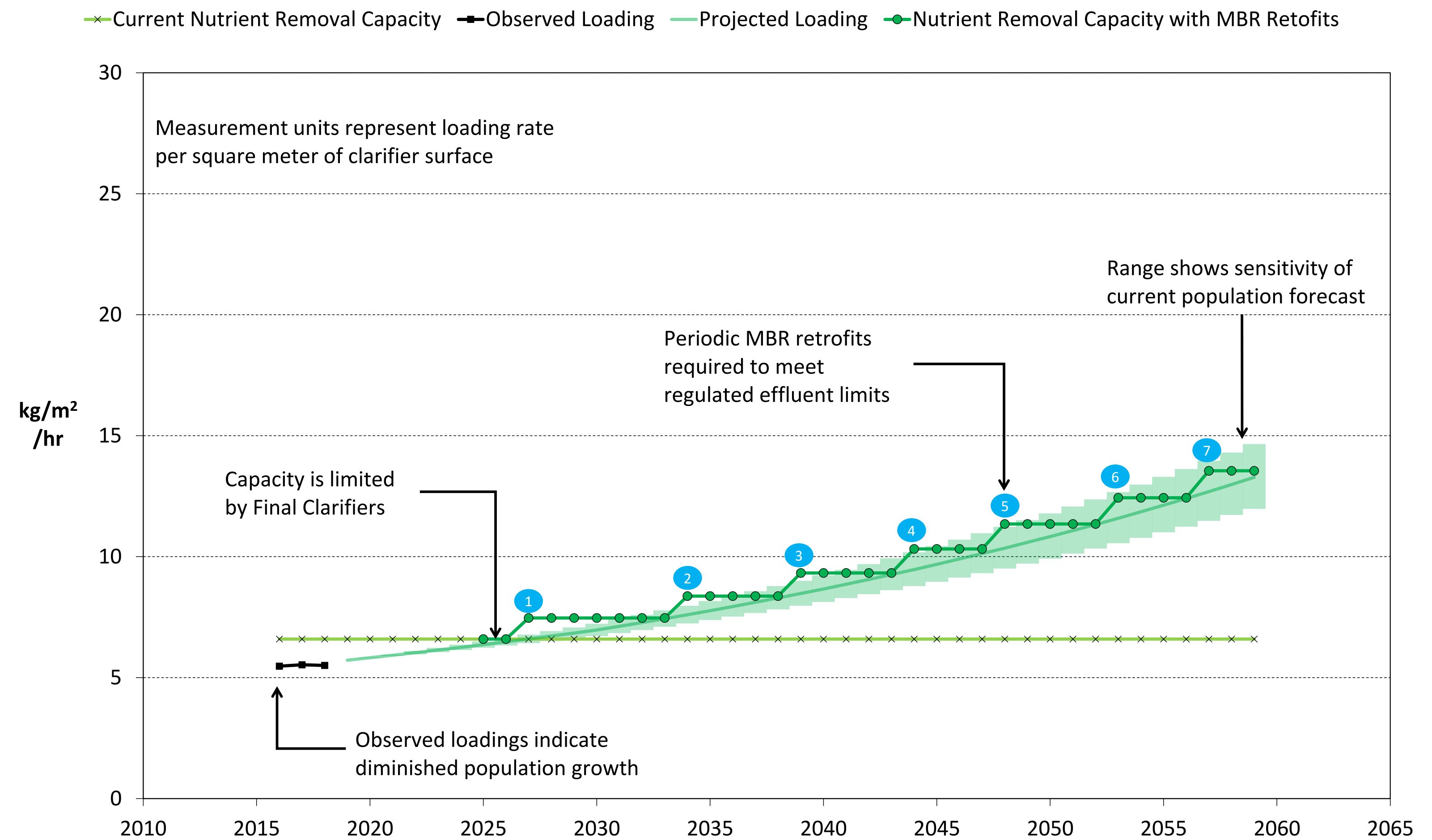
**Conclusion:** Wastewater strength is expected to increase over time.

Gold Bar WWTP will **have to increase its nutrient removal capacity** to keep pace. This is accomplished by retrofitting existing secondary clarifier tanks with membrane technology. These retrofits will be required at a slower pace if South Edmonton Sanitary Sewer (SESS) flows are redistributed between Gold Bar WWTP and ACRWC.



Starting in 2027 EPCOR will start retrofitting existing secondary clarifier tanks with membrane technology

**Gold Bar WWTP Nutrient Removal Capacity**



## THERE ARE 3 COMPONENTS OF WASTEWATER FLOW TREATMENT

### LIQUIDS

We have capacity to treat flows well into the future (2060 or longer).

### SOLIDS

We have capacity to treat flows well into the future (2060 or longer).

### NUTRIENTS

We can increase our capacity over time by retrofitting existing tanks with membrane technology. These retrofits will be required at a slower pace if South Edmonton Sanitary Sewer (SESS) line is diverted to the Alberta Capital Region Wastewater Commission Treatment Plant.



Membrane technology that would be inserted into existing tanks

## PLANNING CONCLUSIONS

**Gold Bar WWTP is able to safely treat all flows that come to it through 2060 while remaining within its existing footprint and fenceline**

1. Gold Bar WWTP has **ample hydraulic capacity** meaning that it is currently sized to handle liquid flows through 2060. Growth in sanitary flows is expected to be flat due to the impact of water conservation.
2. Gold Bar WWTP also has **spare solids treatment capacity** in the digesters on site to treat solids growth through 2060. Solids loading to the plant is expected to increase in proportion to population growth.
3. As the amount of municipal waste grows with population and flows are moderated due to water conservation, wastewater strength is expected to increase over time. Gold Bar WWTP will **have to increase its nutrient removal capacity** to keep pace. This is accomplished by retrofitting existing secondary clarifier tanks with membrane technology. Current projections indicate that the earliest this would be needed is 2027. These retrofits will be required at a slower pace if future growth in sanitary flows from the SESS system is redirected to Alberta Capital Region Wastewater Commission.





## DO MORE FLOWS MEAN MORE IMPACT?

# NO

- We have a long term plan in place to stay within the existing fenceline for the duration of the planning horizon (2060)
- Implementation of new technologies will allow us to mitigate any indirect impacts
- Throughout the past six decades the Gold Bar WWTP has been updated and improved significantly in order to provide service to the growing population of the City, while lowering its impact on the environment and the community by means of using new technology. EPCOR commits to continue doing this and minimize the operational impact of Gold Bar WWTP regardless of the volume of flows received for treatment.

## IS THE SESS LINE GOING TO IMPACT OUR NEIGHBORHOOD?

- The South Edmonton Sanitary Sewer (SESS) is not a single trunk line, it is a system of sewers that services southern areas of the City.
- Construction of the SESS system has been ongoing for more than a decade and is necessary to service associated areas.
- Sanitary flows from the City areas serviced by the SESS system are currently conveyed to Gold Bar Wastewater Treatment Plant through the existing collection system infrastructure. This has not increased the external impact of Gold Bar WWTP.
- A decision on the ultimate distribution of the SESS flows will not be required until after 2030.
- Construction of the SESS system is not likely to impact the river valley or the Gold Bar community as these connections are at a distance and made using underground construction methods.

## WHY DO WASTEWATER PLANTS REQUIRE A BUFFER ZONE AND WILL IT IMPACT US?

- As per provincial design guidelines buffer zones are required for mechanical wastewater treatment plants only to prevent the occurrences of objectionable odours.
- In regards to setback distances from GBWWTP, buffer zones or setback distances are design standards for new infrastructure. Setback distances are designed to mitigate potential odour impacts to the community.
- This requirement was first considered as part of provincial design guidelines in 1976, approximately 20 years after the plant was built and about 15 years after residents had moved in closer to the plant.
- EPCOR understands the importance of odour reduction and will submit plans to ensure that we are continuing to decrease odour impacts beyond the fenceline.
- The proposed air quality monitoring station will be used to demonstrate compliance with Alberta Ambient Air Quality Objective. This should address any concerns related to insufficient buffer zone or setback distance.



## YOUR FEEDBACK: PUBLIC ENGAGEMENT

- EPCOR plans to continue its public engagement to refine and finalize the Integrated Resource Plan for the Gold Bar WWTP.
  - What additional public engagement tactics do you recommend we use to involve neighbours and other stakeholders?
  - What additional information do you recommend be shared with stakeholders?
- **When the City leads engagement on SESS in the future, what information or tactics would you like to see?**



TELL US WHAT YOU THINK

# SAFETY & HYGIENE PLAN (PARKING LOT & OPERATIONS CENTRE)

## HOW DO WE ENSURE SAFE MOVEMENT ON SITE WHILE IMPROVING WORKER HYGIENE AND SAFETY?

### DEFINE THE GOAL

1. **Ensure safe movement on-site.** Develop a plan for on-site vehicle and people movement that improves worker safety.
  - Relocate vehicle parking away from congested active treatment / process areas of the plant, and near support facilities
2. **Improve worker hygiene and safety.** Develop a plan for the location of non-process buildings and hygiene facilities that improves worker safety and limits health risks.
  - Develop acceptable locker / shower facilities
  - Relocate support facilities away from congested active treatment / process areas of the plant
  - Use opportunity to relocate support facilities within the fenceline as they require rehabilitation or improvement

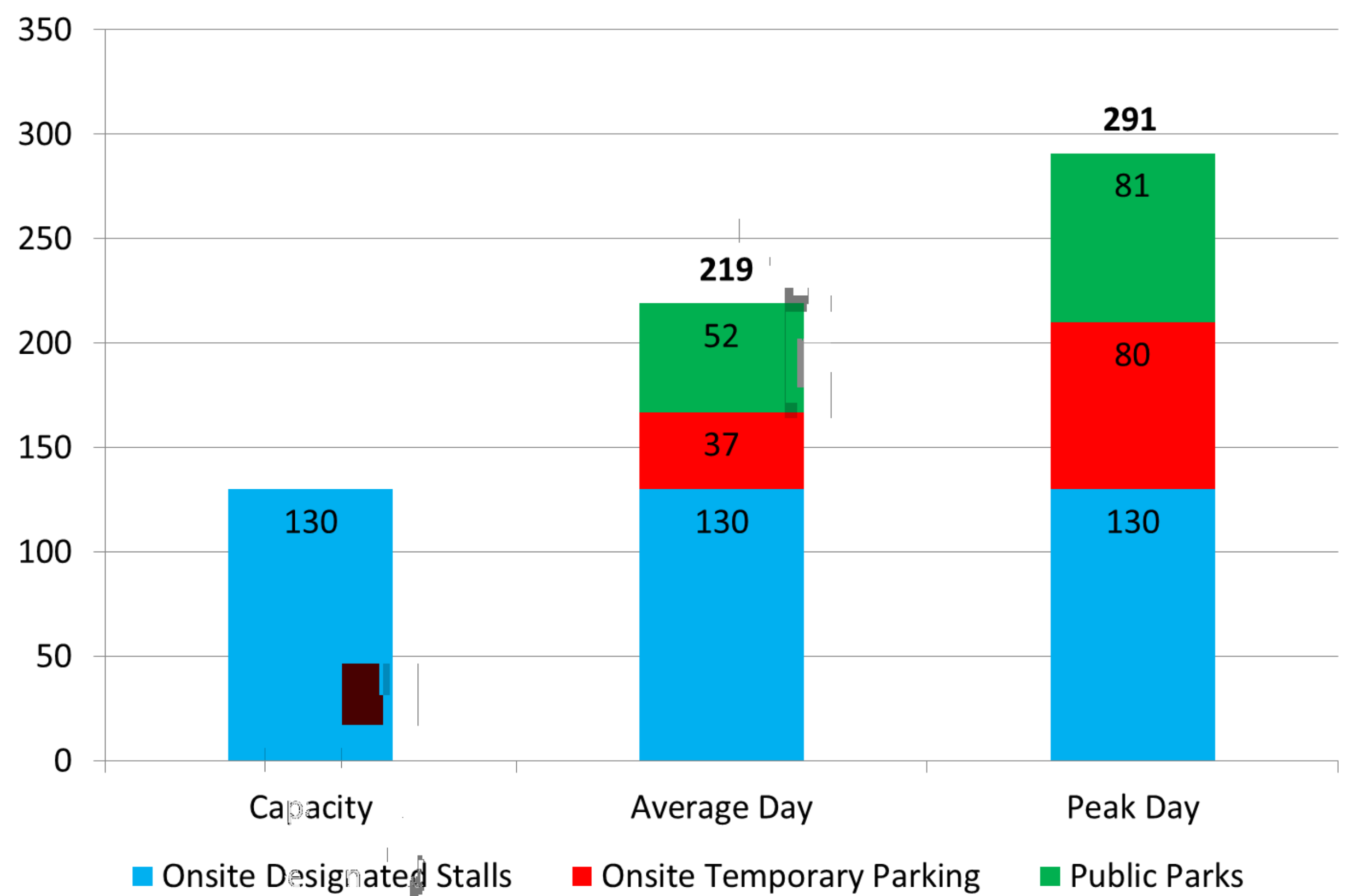


**CURRENT STATE: SAFE MOVEMENT**

- Up to 210 employees and visitors park on site (130 in designated stalls and 80 in temporary or non-designated stalls)
- About 50-80 contractors are using Gold Bar Park and Capilano Park lots
- This is **not expected to grow** for the foreseeable future



**Gold Bar WWTP Parking Observations 2018**



- Most of the designated parking and temporary parking is near active treatment and process areas at the centre of the plant which creates significant safety risks including traffic congestion and increased pedestrian-vehicle interaction.



**DESIRED FUTURE STATE: SAFE MOVEMENT**

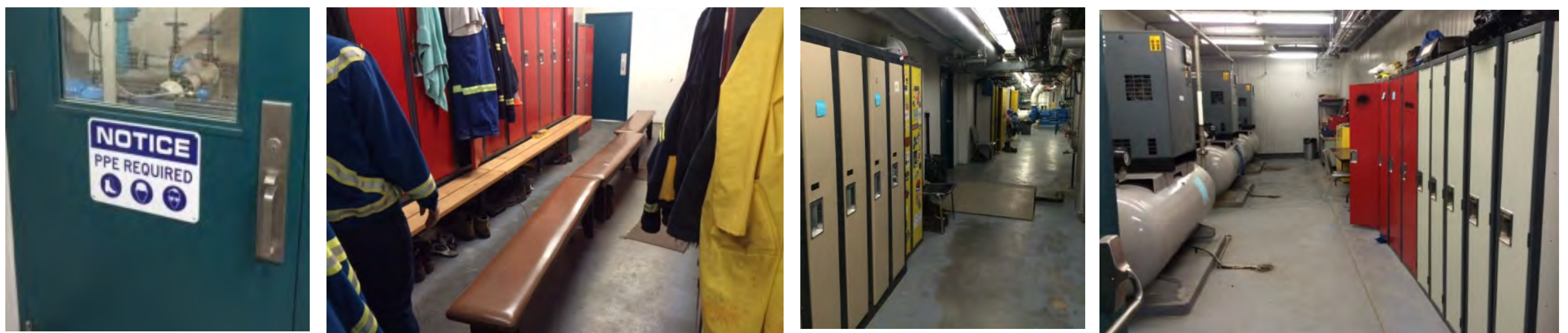
**Desired future state: Provide 190 – 220 on-site parking stalls for employees and contractors**

- Locate away from active treatment and process areas
- Locate near work place

*In this future state, there would continue to be some overflow parking by contractors in the adjacent City parks.*

## CURRENT STATE – HYGIENE AND SAFETY

- In 2015 EPCOR completed a study which assessed the risks to employees working with wastewater and its biological hazards
- A 2017 review recommended specific facility improvements
- Current facilities do not have proper separation of clean and dirty clothing (having showers between clean lockers and dirty lockers)
- Some locker and shower facilities require staff to walk through process areas, and lockers themselves are in process hallways



## FUTURE STATE - HYGIENE AND SAFETY

### Recommendations for Staff Hygiene Facilities (from study in 2017)

- Facilities should be available to keep street clothes and personal items separate from PPE and work clothes
- Shower and hand washing facilities need to be available for people to be able to clean up after contact with wastewater
- Locker rooms should have storage space for boots that is separate and at floor level or at bottom of lockers

# SAFE MOVEMENT/HYGIENE AND SAFETY – OPTIONS OVERVIEW

## Options Overview

- **Four options** have been developed to meet the hygiene and safety goals
- Each of the options includes **on-site parking in a defined location**, and **changing and shower facilities in a place separate from process areas**.

## The main variables between the options are:

- The **location** of parking and hygiene facilities
- The **sizing** and type of **structure**
- The **cost** to implement
- The implications of location and sizing decisions
  - On **land use** inside and outside the fenceline
  - On the **timespan** or **complexity** of implementation
  - On the **potential community impact** (proximity, visibility, traffic)
  - On the **ability to add technologies or processes** in the future
  - On **future maintenance and construction** (e.g. access to laydown areas)

Not currently recommended



**OPTION 1: ORIGINAL PROPOSAL**

- Parking:
  - Surface parking lot with 220 stalls
- Buildings:
  - Operations Centre: three story, Mtc/Ops lockers, HEI Office, Control Room
  - Maintenance/Admin offices (Future)
- Other:
  - City Parks Yard relocated elsewhere
  - Nordic Ski Club relocated
  - Mountain bike trail stays as-is but would be relocated and rebuilt in the future
  - Parking accessible to public after daytime work hours

Not currently recommended

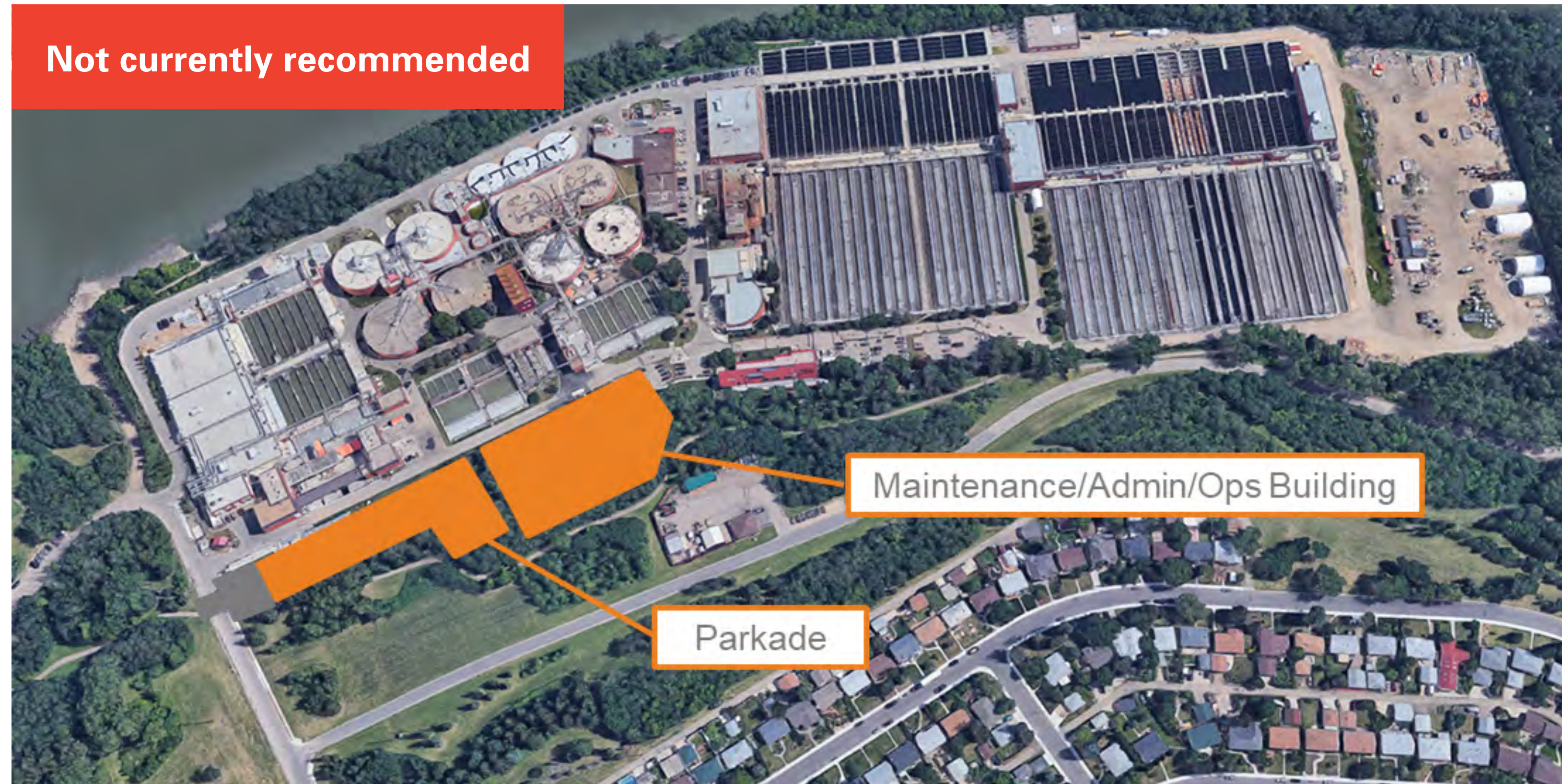


**OPTION 2: PARKS YARD PARKADE**

- Parking:
  - Build a 220 stall three-story parkade on top of the City Parks Yard, reducing the footprint used within Gold Bar Park
- Buildings:
  - Operations Centre: three story, Mtc/Ops lockers, HEI Office, Control Room
  - Maintenance/Admin offices (Future)
- Other:
  - City Parks Yard relocated elsewhere
  - Nordic Ski Club relocated
  - Mountain bike trail stays as-is but would be relocated and rebuilt in the future



Not currently recommended



**OPTION 3: PARKADE NORTH OF TRAIL**

- Parking:
- Build an elongated 220 stall parkade north of the trail, reducing the footprint used within Gold Bar Park and moving the structures away from the road
- Buildings:
- Maintenance/Admin/Ops Building
- Other:
- City Parks Yard stays as-is
  - Nordic Ski Club stays as-is
  - Mountain bike trail relocated and rebuilt



**OPTION 4: INSIDE FENCE AT EAST END**  
**EPCOR's Recommended Option**

- Parking:
- Build a 150 stall surface parking lot at east end, and use 45 stall surface lot stalls in the south-central area near the new Ops Centre. Reduce the laydown area
- Buildings:
- Operations Centre: one story, inside the fenceline
  - Maintenance/Admin offices moved from the centre to the east end, inside the fence
- Other:
- City Parks Yard and Nordic Ski Club unchanged. No development outside the existing fenceline. Main entrance moved to east end of site (arriving vehicles will now use Gold Bar Park Road; exiting vehicles are unchanged).

## DESIGN PRINCIPLES

EPCOR has identified the following design principles (as shown in colour) as considerations relevant to the design and execution of the Safety and Hygiene project. Do you think any are missing?

Shared Outcomes	QUALITY OF LIFE	SAFETY	RELATIONSHIP	ENVIRONMENT	RELIABLE, RESPONSIBLE, SUSTAINABLE
	Accelerate odour reduction	Continuously improve safety	Communicate openly	Continuously improve environmental performance	Continuously maintain reliable operations
	Remain within the existing fenceline	Ensure safe movement on-site	Align operating protocols	Reduce environmental impacts	Plan for a range of scenarios
Design Principles	Prevent increases to odour and noise	Improve worker hygiene and safety	Engage regularly	Increase resiliency	Prudently manage impacts to ratepayers
	Restore disturbed vegetation	Protect public safety from site-related traffic	Share options and optimize designs	Engage employees and stakeholders	
	Mitigate temporary impacts				

TELL US WHAT YOU THINK

## YOUR FEEDBACK: OPTIONS DISCUSSION

- Does one or more of the options stand out as the best way to meet the goal?
- What improvements could be made to EPCOR's recommended option?



WHAT DESIGN ELEMENTS WOULD YOU LIKE TO SEE REFLECTED IN THE PROPOSED PARKING FEATURE AND OPERATIONS CENTRE?  
(LOOK, FEEL, FEATURES, ETC.)

LOOK OF BUILDING	FEATURES	OTHER

# ODOUR CONTROL ACTION PLAN

## HOW DO WE ACHIEVE ODOUR REDUCTION AT GBWWTP?

### DEFINE THE GOAL

1. **Achieve odour reduction.** Operating and capital improvements at Gold Bar will reduce odour from existing operations and meet current and future odour performance standards.
2. **Monitor, report and comply.** Add new regulatory monitoring to give stakeholders the information they need to judge that the air quality is safe and consistent with a good quality of life and enjoyment of parks and recreation.
3. **Prevent increases to odour.** Design the facility to be able to handle future volume changes without increases in odour.



**CURRENT STATE: ODOUR**

- Majority of the odour generation comes from the preliminary and primary treatment buildings (red area), with secondary sources from solids treatment buildings (orange area)



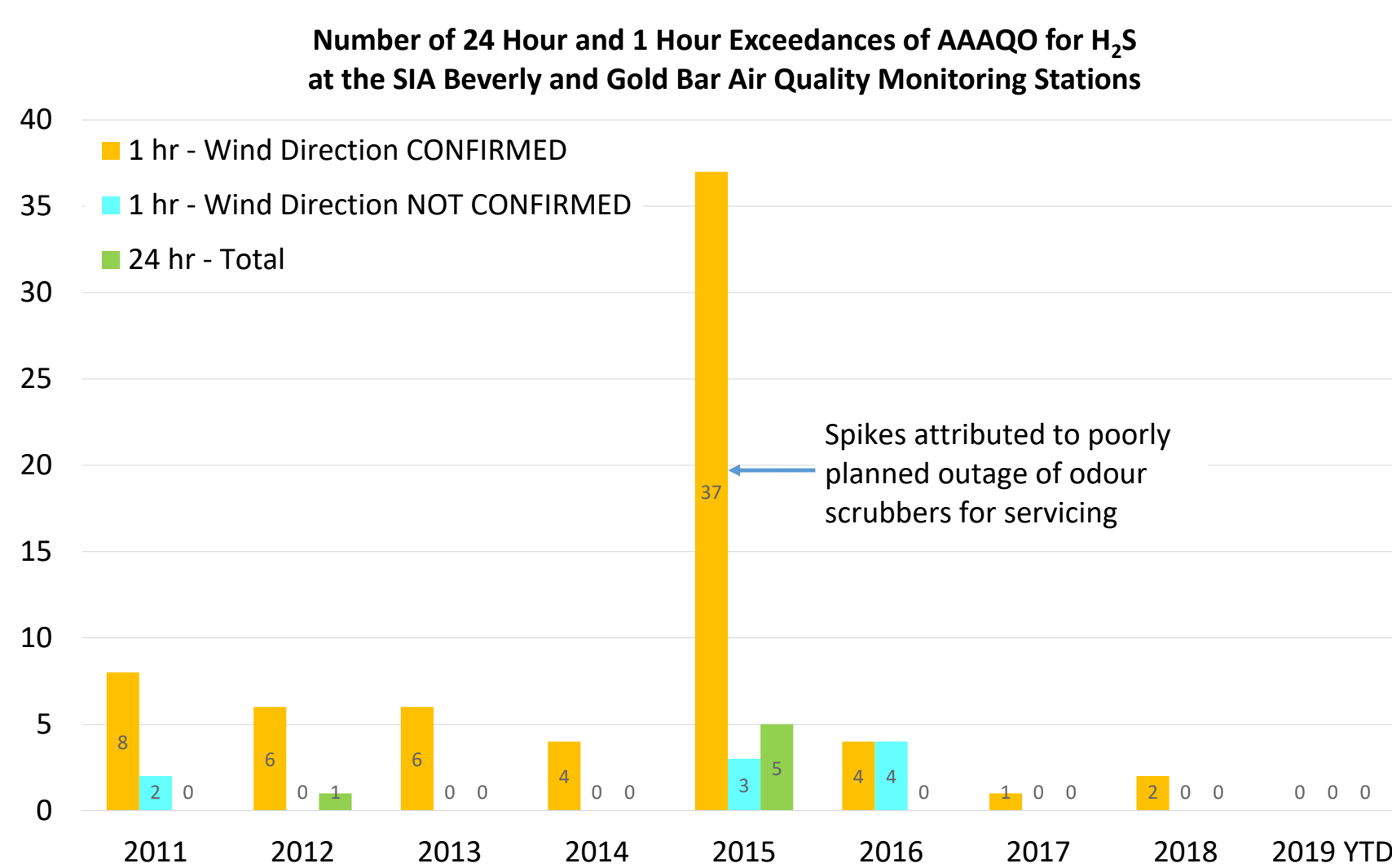
- Preliminary and Primary Treatment
- Solids Treatment
- Non-Process Facilities
- Secondary Treatment
- Tertiary Treatment

**Key historical sources of odour:**

- EPT Clarifiers
- Ineffective Scrubbers
- Headworks Buildings
- Primary Clarifiers
- Fugitive Sources (overhead doors, unsealed process and foul air ducting, etc.)

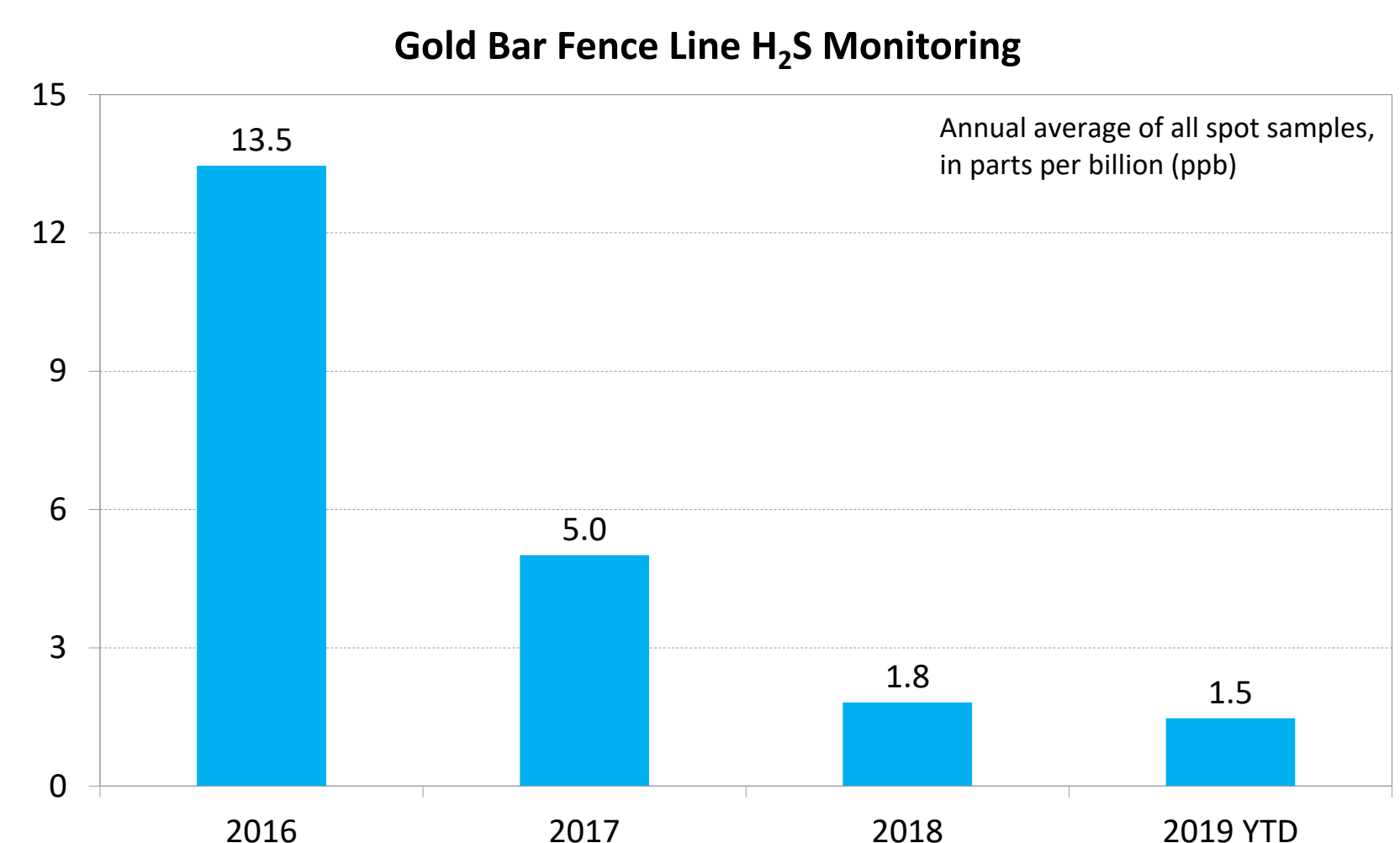
**Alberta Ambient Air Quality Objective:**

- An average of no more than 10 parts per billion over a one hour period, or 3 parts per billion over a 24-hour period
- Ambient air quality is monitored at the Beverly and Gold Bar stations.
- Action Plan implemented following exceedances in 2015 – significant improvement since then



**Spot Monitoring**

- **Spot Monitoring Samples** taken from 8 locations at the fence line also show significant reductions in odour emissions.
- This has also shown marked improvement



## UPDATE ON COMPLETED ODOUR PROJECTS

A \$10 million series of projects has been completed to date and has helped to significantly reduce odour emissions:

- Sealed Enhanced Primary Treatment clarifiers
- Upgraded ventilation and odour collection
- Scrubber upgrades



## DESIRED FUTURE STATE: ODOUR REDUCTION

### Current State

#### *Odour levels*

- Odour exceedances have been reduced at the two monitoring stations
- Spot monitoring at the fenceline also shows reductions

#### *Monitoring and Reporting*

- Alberta Capital Air Shed publishes real time monitoring results from its stations in Beverly and near Gold Bar School
- EPCOR publishes fenceline spot monitoring results monthly
- There is no continuous air quality monitoring at the fenceline or in the adjacent part of Gold Bar Park

### Desired Future State

#### *Odour levels*

- Odour levels consistently meet current and future standards, and are safe for human health and recreation

#### *Monitoring and Reporting*

- Additional continuous air quality monitoring is in place closer to the fenceline
- Results are available in real time in a format that is useful for stakeholders
- New regulatory monitoring and reporting give stakeholders the information they need to judge that the air quality is safe for human health and recreation

## ODOUR ACTION PLAN OVERVIEW

- **Additional projects** are being implemented to further reduce odour and ensure compliance
- In conversation with Alberta Environment and Parks (AEP) about updating approval:
  - A new **air quality monitoring station** is under discussion and we would like your input on location and mitigating impacts
  - **New regulatory performance standards** are proposed related to the **performance of odour control equipment** and **ambient air quality**

### ADDITIONAL ODOUR PROJECTS

The following capital and operating initiatives will further reduce odour from existing operations, and meet current and future odour performance standards.

Action	Description	Cost	Status
<b>Odour Monitoring System</b>	Includes installation of weather and air quality monitoring stations	\$1.0 M	Design in progress
<b>EPT Scrubber Upgrades</b>	Redesign existing EPT Scrubber and install additional scrubber if necessary for revised capacity and better performance	\$8.4 M	Design in progress
<b>Grit and Screen Buildings Ventilation Upgrades</b>	Upgrade ventilation and implement odour control in headworks buildings	\$2.2 M	Design in progress
<b>Seal Fermenter Roofs</b>	Seal Fermenter Roofs in order to prevent fugitive odour emissions.	\$0.5 M	Design in progress
<b>Subtotal</b>		<b>\$12.1 M</b>	



## NEW PERFORMANCE STANDARDS

EPCOR is working with Alberta Environment & Parks to establish odour control requirements, reliable monitoring and effective reporting.

Proposed updates to the Gold Bar **Operating Approval** would:

- Add **odour scrubber operating performance** limits
- Add new **continuous monitoring and reporting** requirements for air entering and exiting the **odour scrubbers**
- Add standard requirements to **control fugitive emissions**
- Add **air monitoring and reporting at the fenceline**
- Require the **Alberta Ambient Air Quality Objectives be met** in close proximity to the south fenceline of the plant (new AQM station)

## NEW AIR MONITORING STATION

A new continuous monitoring station between the Plant and the nearest receptors (houses along 109 A Avenue) will be developed



New Monitoring Station

Existing Monitoring Station



### LOCATION OF NEW MONITORING STATION

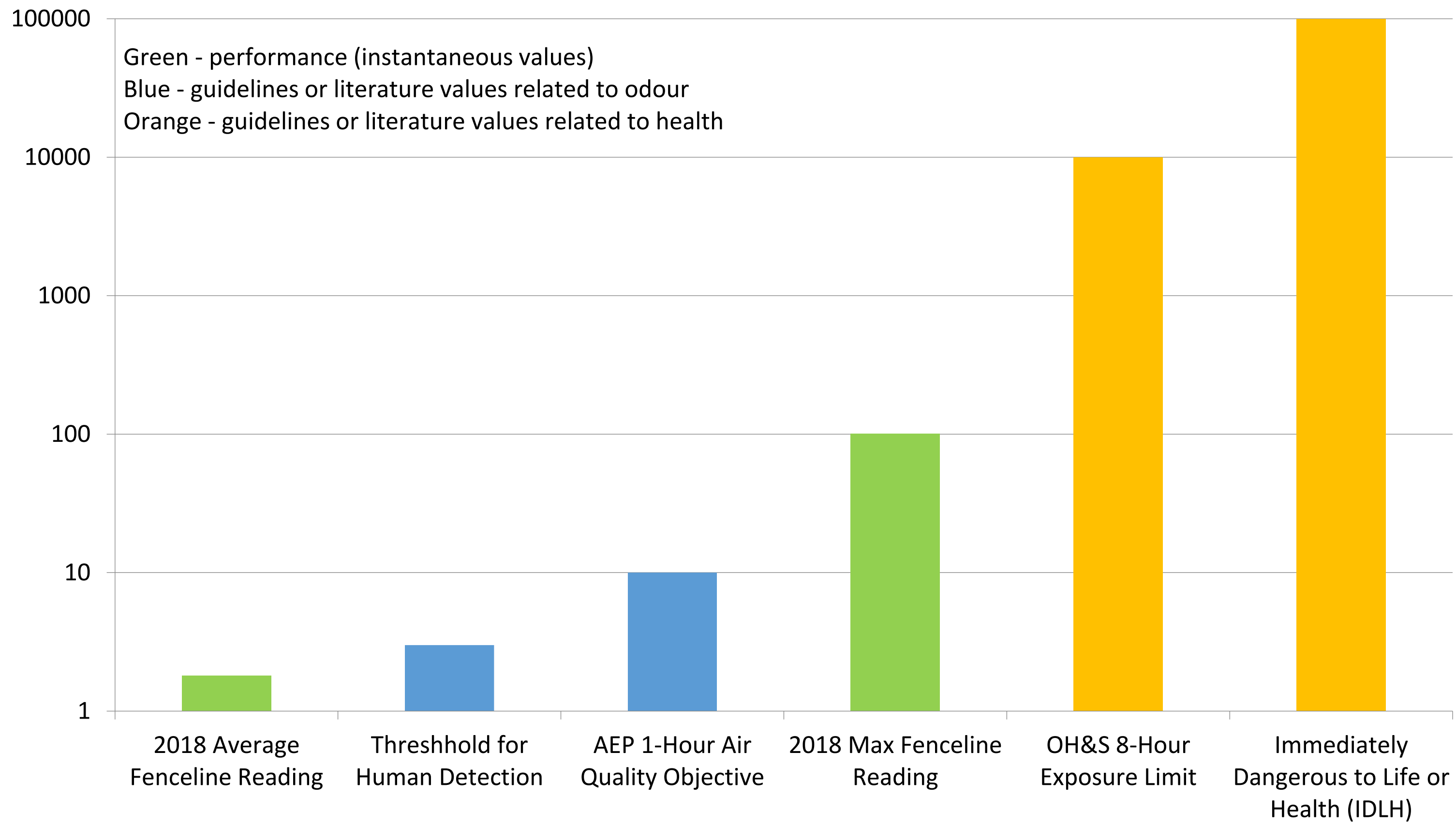


# ODOUR HEALTH AND SAFETY

## WHERE DOES THE SMELL COME FROM?

- Due to the raw wastewater that flows through Gold Bar it is normal for odours to occasionally result. Most of these odours are related to hydrogen sulphide (H<sub>2</sub>S). This gas is naturally produced by biological activity in wastewater and is characterized by a rotten-egg smell that can be detected even at very low levels.
- H<sub>2</sub>S levels in the air at the plant can vary depending on a variety of factors including, when maintenance work is happening that involves cleaning the tanks, removing grit bins from the site, or opening the overhead doors.

**H<sub>2</sub>S levels at GBWWTP, Provincial Odour Guidelines and Safety Regulations**



## DESIGN PRINCIPLES

EPCOR has identified the following design principles (as shown in colour) as considerations relevant to the design and execution of the Odour Control Action Plan. Do you think any are missing?

Shared Outcomes	QUALITY OF LIFE	SAFETY	RELATIONSHIP	ENVIRONMENT	RELIABLE, RESPONSIBLE, SUSTAINABLE
	Accelerate odour reduction	Continuously improve safety	Communicate openly	Continuously improve environmental performance	Continuously maintain reliable operations
	Remain within the existing fenceline	Ensure safe movement on-site	Align operating protocols	Reduce environmental impacts	Plan for a range of scenarios
Design Principles	Prevent increases to odour and noise	Improve worker hygiene and safety	Engage regularly	Increase resiliency	Prudently manage impacts to ratepayers
	Restore disturbed vegetation	Protect public safety from site-related traffic	Share options and optimize designs	Engage employees and stakeholders	
	Mitigate temporary impacts				

TELL US WHAT YOU THINK

## YOUR FEEDBACK: CURRENT STATE AND DESIRED FUTURE STATE

- What other information would be useful to you or other stakeholders?
- **How could we improve how we communicate about odour?**



# REDUCING FLARING AND GHG EMISSIONS: RENEWABLE NATURAL GAS

HOW DO WE SUPPORT OPPORTUNITIES TO REDUCE ENVIRONMENTAL IMPACTS, IMPROVE SUSTAINABILITY, ENHANCE RESOURCE RECOVERY AND CONTINUOUSLY IMPROVE ENVIRONMENTAL PERFORMANCE?

## DEFINE THE GOAL

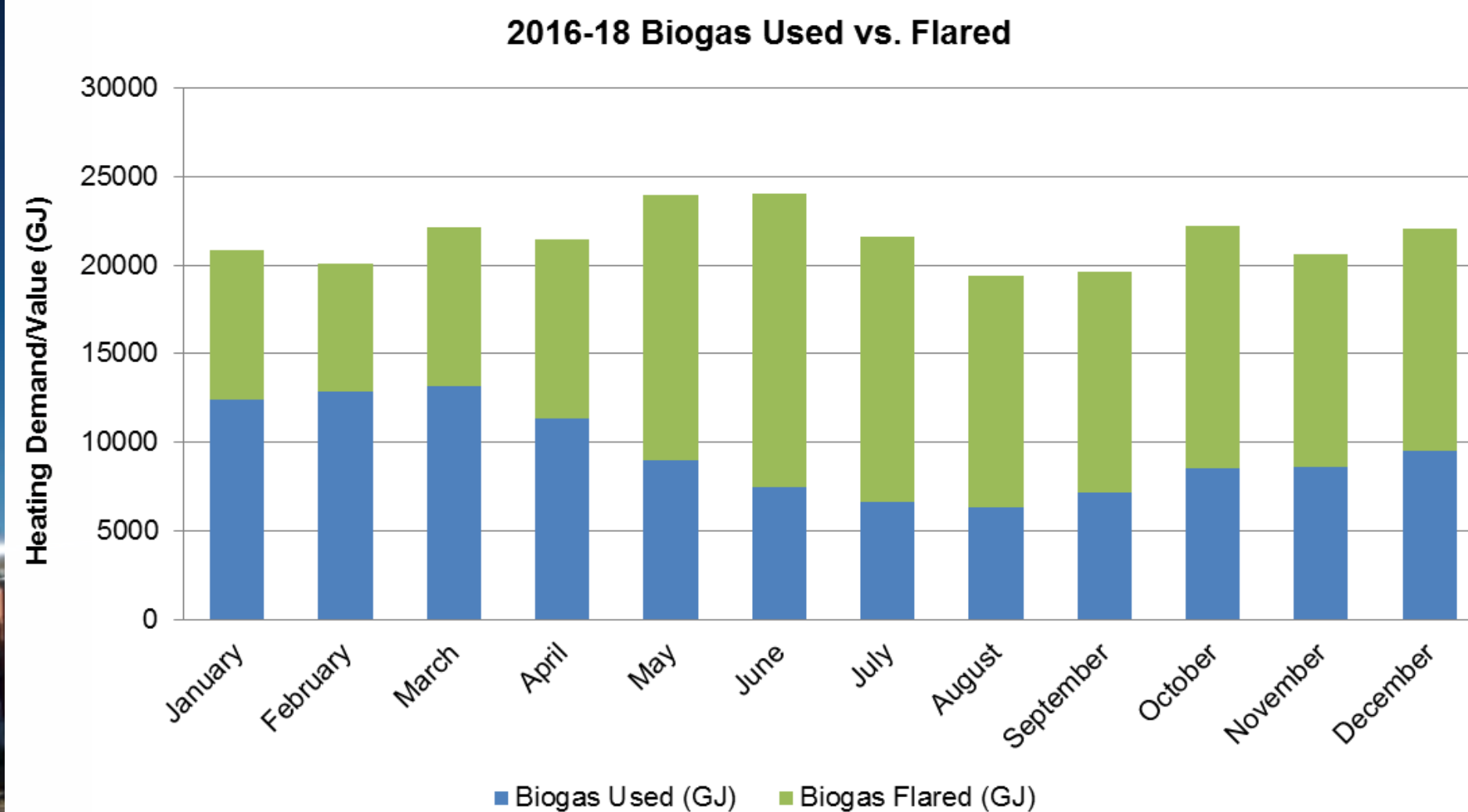
**Pollution is prevented. The impact of Gold Bar on air, land, water, climate and ecosystems is reduced.**

1. **Reduce environmental impacts.** Prioritize investments and operating practice changes that reduce Gold Bar 's environmental impact, with a focus on the reduction of greenhouse gas emissions, the protection of water quality and the protection of parkland.
2. **Improve sustainability and enhance recovery of renewable resources.**
3. **Continuously improve environmental performance.** Assess current environmental performance, evolving standards and emerging risks, and propose initiatives that maintain regulatory compliance and improve environmental performance.



## CURRENT STATE: BIOGAS AND FLARING

- **Biogas is a by-product of wastewater treatment (mostly solids digestion).**
- **Today, about 44% of the biogas generated in the solids digestion process at Gold Bar is used for heating. About 56% is flared.**
- **Flaring volumes are highest in the summer months, when there is less need to use gas on-site for heating (70% flared).**



### Current State

55% of biogas is wasted via flaring  
- About 150,000 GJ of energy in 2018.

- Generated biogas is used for on-site heating (process and plant heating)
- 70-80% of the plant's heating demand is currently being met using Biogas
- Reduced heating demand and more flaring during summer season
- Contaminants in raw biogas cause maintenance issues with existing boilers

### Desired Future State

Nearly all biogas is turned from waste into a useful product

- Conversion into renewable natural gas that can be used by others

The benefits include:

- Reduced flaring and lower air emissions
- Less waste, darker night sky, less odour
- Greenhouse gas reduction, as the use of renewable natural gas displaces consumption of regular natural gas

## OPPORTUNITY OVERVIEW: BIOGAS TO RENEWABLE NATURAL GAS

Rather than flaring, technology exists to capture biogas, clean it, and deliver it into the ATCO natural gas distribution system as a source of **renewable natural gas**.

- Upgrading biogas to renewable natural gas would require some additional biogas cleaning and injection equipment on-site, and making an underground connection to the ATCO gas line that runs next to Gold Bar Park Road.
- Delivering gas for off-site use would require an amendment to the Gold Bar operating permit
  - The original permit only allowed biogas for on-site uses (such as heating or renewable power generation)



**Option 1 (Previous Consideration – Not recommended)**

- Locate in east laydown area
- Conflicts with moving parking and Admin to east end of site, separate from process facilities
- Requires significant gas piping

**Option 2 (EPCOR Preference)**

- Locate cleaning equipment near digesters where biogas is created (use space currently occupied by primary clarifiers 1 & 2)
- Install biogas storage in the same area

**DESIGN CONSIDERATIONS: LOCATION**

- The location of biogas equipment on-site impacts the siting of other process and non-process facilities
- Currently biogas is generated and stored in digester headspaces and transported to boilers and flares
- Additional biogas storage may be required to supply Renewable Natural Gas facility without interruption



## DESIGN CONSIDERATIONS: INJECTION

- All equipment would be located within the fenceline, and as much as possible within enclosures to minimize noise and visual impact
- The **underground connection** to the ATCO gas system could have **temporary construction impacts** at the east end of Gold Bar Park, and may affect **trees** which would need to be **replaced**



### Key Components

- Biogas Cleaning / Compression
- Biogas Storage
- Biogas Piping
- Biogas injection and underground gas pipeline

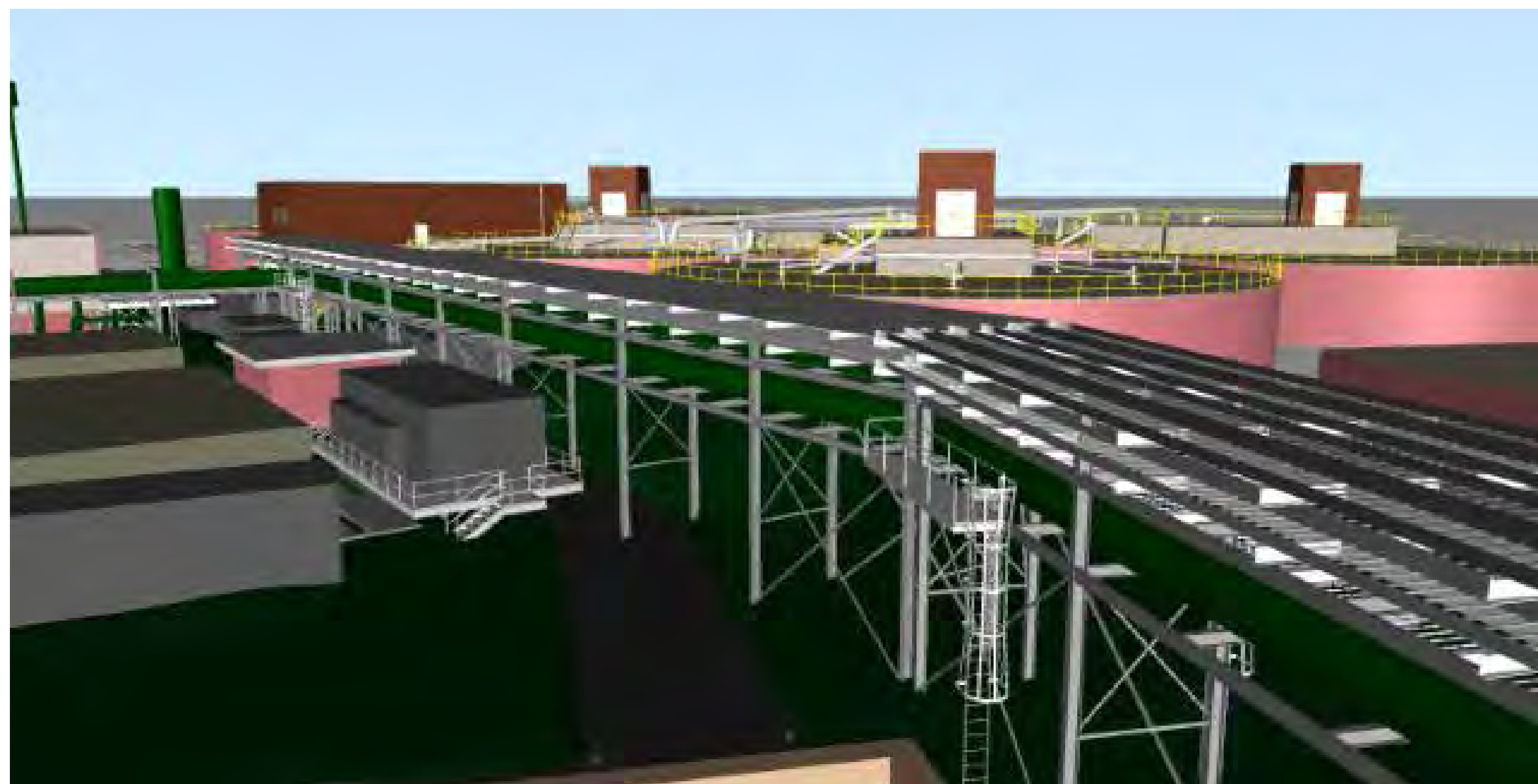
## DESIGN PRINCIPLES

EPCOR has identified the following design principles (as shown in colour) as considerations relevant to the design and execution of the Renewable Natural Gas Project. Do you think any are missing?

Shared Outcomes	QUALITY OF LIFE	SAFETY	RELATIONSHIP	ENVIRONMENT	RELIABLE, RESPONSIBLE, SUSTAINABLE
	Accelerate odour reduction	Continuously improve safety	Communicate openly	Continuously improve environmental performance	Continuously maintain reliable operations
	Remain within the existing fenceline	Ensure safe movement on-site	Align operating protocols	Reduce environmental impacts	Plan for a range of scenarios
Design Principles	Prevent increases to odour and noise	Improve worker hygiene and safety	Engage regularly	Increase resiliency	Prudently manage impacts to ratepayers
	Restore disturbed vegetation	Protect public safety from site-related traffic	Share options and optimize designs	Engage employees and stakeholders	
	Mitigate temporary impacts				

TELL US WHAT YOU THINK

# PIPE RACK SCHEMATICS & CYLINDRICAL STORAGE UNITS



## YOUR FEEDBACK: CURRENT STATE AND DESIRED FUTURE STATE

- What other information would be useful to you or other stakeholders?

## YOUR FEEDBACK: OPTIONS DISCUSSION

- Does one or more of the options stand out as the best way to meet the goal?
- What improvements could be made to EPCOR's recommended option?

## YOUR FEEDBACK: PUBLIC ENGAGEMENT

- Are there any other public engagement tactics you recommend we use to further involve neighbours and other stakeholders on this subject? (besides notification & web updates)

