



Health & Active Living Plaza Sustainability Options

July 27, 2021



Background

Net Zero Defined

- Net Zero Energy
- Net Zero Carbon Emissions

AB Consulting Report

- Net Zero Options
- Net Zero Ready Options

Benefits of Net Zero

Net Zero Facts and Context

HALP Sustainability Options

- Option 1 Thinking Green +
- Option 2 A Path Toward Net Zero
- Option 3 Full Net Zero



- Site Plan and Facility Design has surpassed 50% completion
- At present scope the design will be complete for Q2 2022
- In Q1 2021 the Environmental Advisory Committee (EAC) Requested a Net Zero Facility Design or Net Zero Ready Options be considered. EAC requested the Town retain AB Consulting for initial review of concepts.
- In Q1 2021 Council direction was provided to retain AB Consulting and review options for report back to Council.
- Project Team and Sub-consultants require a timely decision on Sustainability (Net Zero) Options to complete the design



Benefits of Net Zero

- Our Environment – Decreasing harmful GHG emissions
- Leadership by example
- Potential Off-set of Operating costs
- Potential Return on Investment



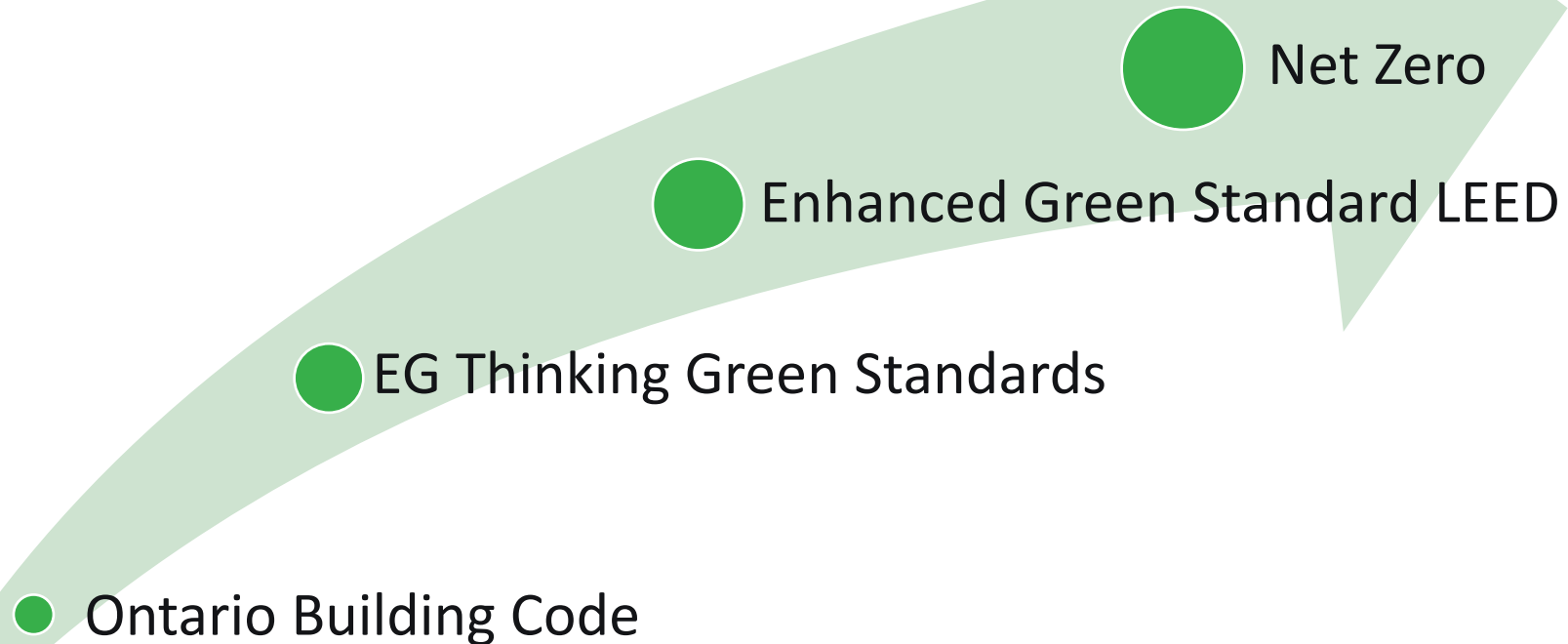
Net Zero Facts and Context

- Limited Projects at this time
- No Similar Recreation Centre Projects in York Region, Ontario or Canada
- Increased Capital Costs and Potential Operational Cost Savings
- Increase in Schedule

Net Zero Sustainability Options and Assumptions

- 2021 Design and Construction Values for Initial Capital Costs are in 2021 Dollars
- Net Zero Enhancements are not Identified in Development Charges Background Study
- Initial Capital Costs Does not Include Costs of Borrowing (Interest)
- Utility Costs are 2021 Estimates with a Consumer Price Index Adjustment Per Year (2%)
- Utility Costs Do Not Assume Market Fluctuations

Development Standards and Environmental Sustainability



Thinking Green Development Standards

Thinking Green Development Standards (Base Contract)

Protection and Enhancement of the Natural Environment

- Community Gardens
- Increased Tree Canopy and Planting Plan
- Soil Quality and Quantity LSRCA
- Water Quality and Quantity LSRCA
- Natural Self-sustaining Vegetation
- Urban Heat Island Reduction
- Cool White Roofs and Green Roof Canopy



Thinking Green Development Standards

Thinking Green Development Standards (Base Contract)

Conservation & Energy

- High Performance Building Envelope
- High Efficiency Mechanical Equipment
- Integrated Heat Recovery
- Passive Lobby Ventilation
- Building Automation System and Controls
- Water Efficiency including Low Flow Hands Free Fixtures
- High Efficiency LED lighting
- Smart Metering
- Enhanced Natural Lighting
- Shielded Exterior Lighting
- Rainwater Harvesting of the entire roof space (80,000 sq ft)



Thinking Green Development Standards

Thinking Green Development Standards (Base Contract)

Complete & Connected Communities

- Pedestrian Networks (Pathways & Trails)
- Placemaking & Streetscape Amenities
- Potential for Public Art
- Bicycle Parking
- Carpool Parking
- Electric Vehicle Parking
- Cycling Lanes, Connectivity & Network
- Universal Design & Enhanced Accessibility
- Enhanced Recycling



Option 1 - Thinking Green + (Base Contract)

Option incorporates Council Approved Thinking Green Development Standards (Base Contract) and the following Net Zero Concepts from the AB Report:

1) Maximize Daylighting 2) Design Indoor/Outdoor Spaces 3) Partial Radiant Systems, 4) Energy Recovery Systems, 5) Low Flow Hands Free Fixtures 6) LED Lighting 7) Utilize High Efficiency Appliances 8) Use Daylight Control Sensors 9) High Thermal Resistance – Increase R-Value of Walls and Roof (R30 and R40)

Estimated Schedule Impact: None

Estimates Cost Implication: None

Option 2 - A Path Toward Net Zero (Net Zero Ready)

Option incorporates Option 1 **Thinking Green + (Base Contract)** and

Includes the following additional Net Zero Concepts from the AB Report:

- 1) High Performance Triple Pane Glass
- 2) Built-in Insulated Pool Cover
- 3) Solar Rooftop Photovoltaic
- 4) Smart Building AI Technology and

Includes the following Net Zero Ready retro-fit options that can be added at a later date or at time of building system replacement.

- 1) Geothermal
- 2) Solar Thermal

Estimated Schedule Impact: 2 Months to Existing Schedule

Estimate Cost Implication: Initial Design and Construction Costs of +/- **\$3M**,

Future Retro-fit Costs of +/- **\$1-3*M** (Depends on Type of Geothermal System)

Initial Return on Investment: +/- \$200,000 in cost savings per year = 13-15 year payback

Option 3 - Full Net Zero

Option incorporates Option 1 **Thinking Green + (Base Contract)** and

All additional Net Zero Concepts from the AB Report:

1) Passive House Building Envelope 2) High Performance Triple Pane Glass 3) Built-in Insulated Pool Cover 4) Solar Rooftop Photovoltaic 5) Smart Building AI Technology 6) Geothermal 7) Solar Thermal 8) Utilize Natural Ventilation as a part of Building HVAC Strategy 9) Displacement Ventilation with Raised Access Floors 10) Utilize Dry-O-Tron Dehumidification

Estimated Schedule Impact: Additional **1 Year** to Existing Schedule (Design Time)
Additional project implications may occur.

Estimate Cost Implication: Initial Design and Construction Costs of +/- **\$15-17M**

Return on Investment: +/- **\$500,000 cost savings per year = 24 to 27 year payback**

Option 3 Full Net Zero - Not Recommended at this time

- Based on current technology this option is not financially prudent as building systems will be replaced prior to end of Payback period.
- **Has a financial implication of +/- \$15 - 17M with an approximate 24 – 27 year payback**
- **Option would require Alternate Funding Sources and is not Development Charge Eligible**
- **Option would require an additional 1 year of design time**

Option 2 A Path Toward Net Zero – Not recommended

- Includes enhancements above the Thinking Green standards, Net 0 Concepts included with the AB Report. Option also provides opportunity to further retro-fit Net 0 Concepts at a later date.
- **Has a financial implication of +/- \$3M with an approximate 13 – 15 year payback**
- **Option would require Alternate Funding Sources and is not Development Charge Eligible**
- **Option would require an additional 2 months of Design time**

Option 1 **Thinking Green + (Base Contract)** – Recommended Option

- Includes enhanced Thinking Green standards and 9 of the Net 0 Concepts included from the AB Report
- **No Financial or Schedule Implications**

Project will include the Thinking Green Design Standards and a minimum of the following Net Zero Concepts:

1) Maximize Daylighting 2) Design Indoor/Outdoor Spaces 3) Partial Radiant Systems, 4) Energy Recovery Systems, 5) Low Flow Hands Free Fixtures 6) LED Lighting 7) Utilize High Efficiency Appliances 8) Use Daylight Control Sensors 9) High Thermal Resistance – Increase R-Value of Walls and Roof (R30 and R40)

Additionally the Town may add additional Net Zero Concepts with potential Grant Funding where feasible.

Proposed Council Resolution and Next Steps

Proposed Council Resolution

THAT Council approve the Thinking Green Design Standards Plus for the Health & Active Living Plaza Project with a minimum of the following Net Zero Concepts from the AB Consulting Report at no cost or schedule implications:

1) Maximize Daylighting 2) Design Indoor/Outdoor Spaces 3) Partial Radiant Systems, 4) Energy Recovery Systems, 5) Low Flow Hands Free Fixtures 6) LED Lighting 7) Utilize High Efficiency Appliances 8) Use Daylight Control Sensors 9) High Thermal Resistance – Increase R-Value of Walls and Roof (R30 and R40)

THAT additional Net Zero Concepts may be added to the project with potential Grant Funding where feasible.

THAT staff continue with and complete the Health & Active Living Plaza Design for planned tender for Quarter 2 of 2022.