



# **Heritage Heights**

## ***A Brampton Green Community***

### ***Heritage Heights Community Energy Plan***

***Brampton Environment Advisory Committee***

December 1, 2021

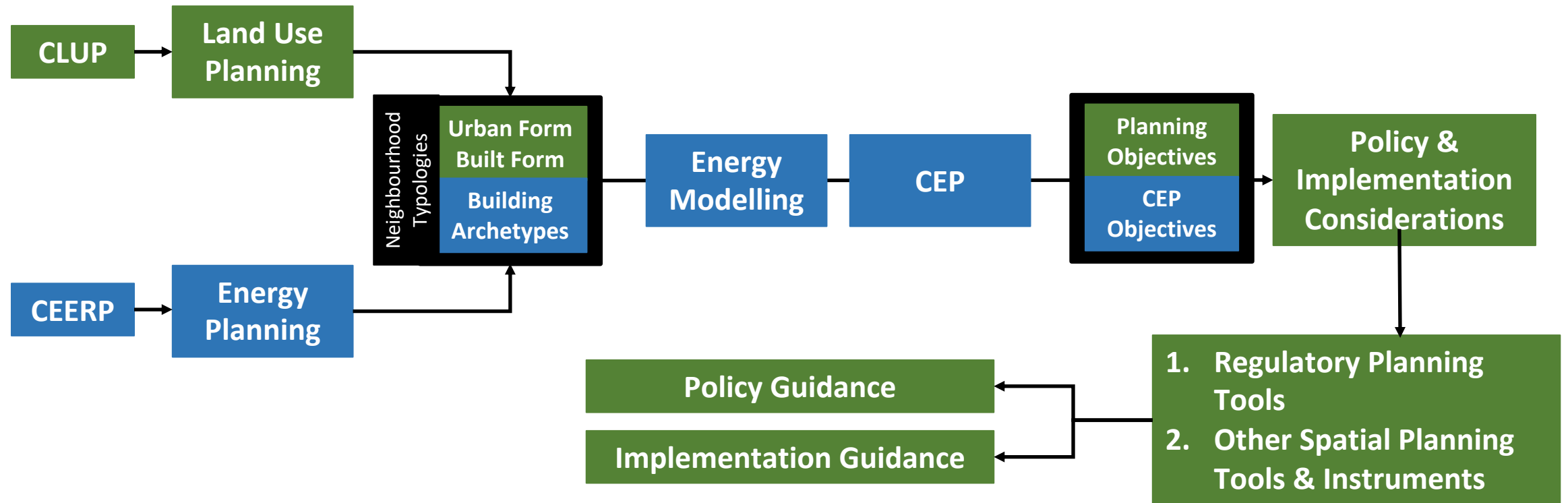


HERITAGE HEIGHTS  
Community Energy Plan  
brampton.ca

**Garforth International Canada Inc**  
Energy Productivity Solutions

# Heritage Heights – A Brampton Green Community

## *Integrate Land Use & Energy Planning*



# City of Brampton Community Energy & Emissions Reduction Plan



# Community Energy and Emissions Reduction Plan Goals

## ■ Emissions

- *Reduce community-wide emissions by 50% from 2016 levels by 2041 and establish a pathway to reduce emissions by at least 80% by 2050 to meet or exceed federal and provincial targets.*

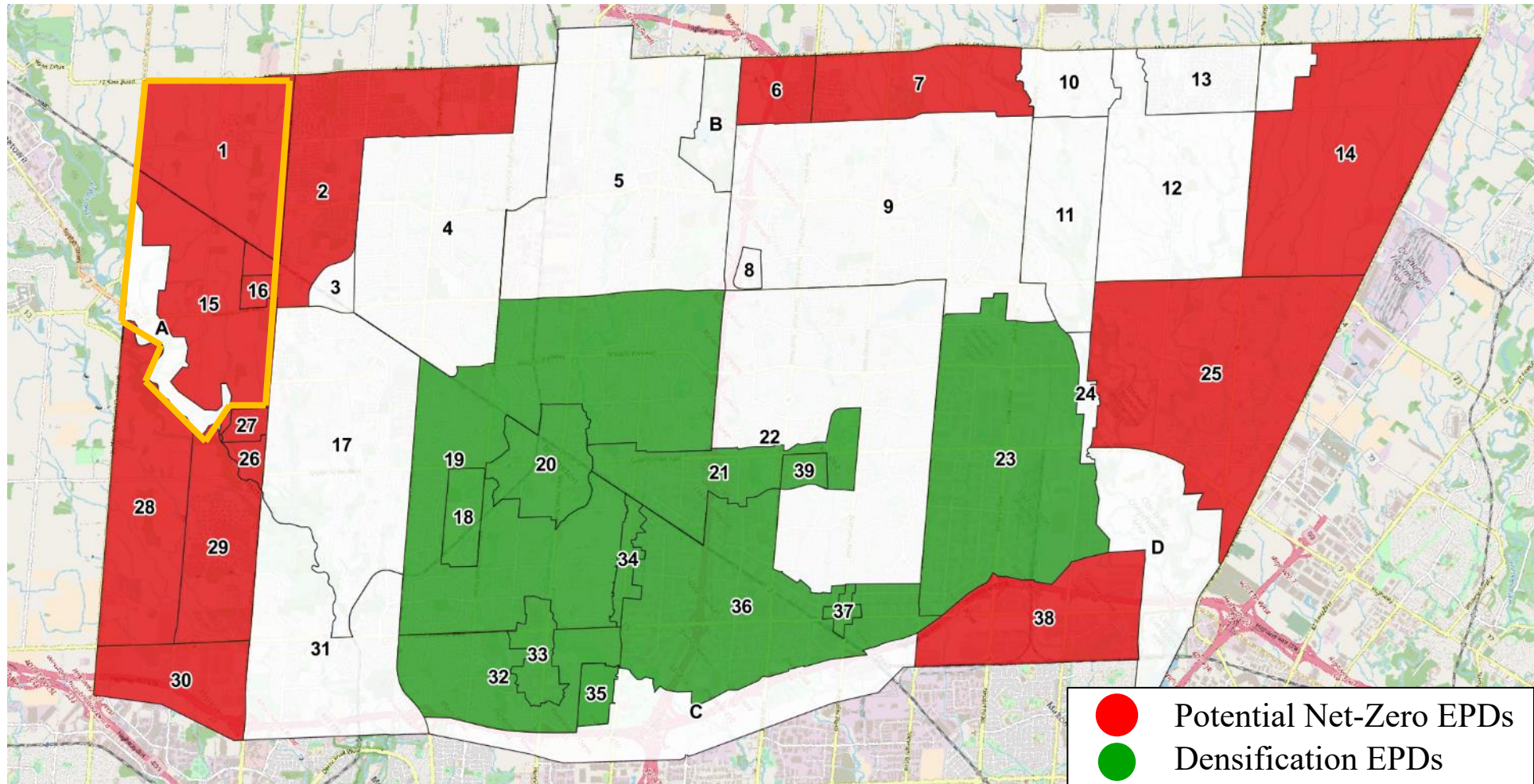
## ■ Economic

- *Retain at least \$26 billion in cumulative energy costs within the community by 2041.*

## ■ Energy

- *Based on global best-practices, reduce community-wide source energy use by at least 50% from 2016 levels by 2041.*

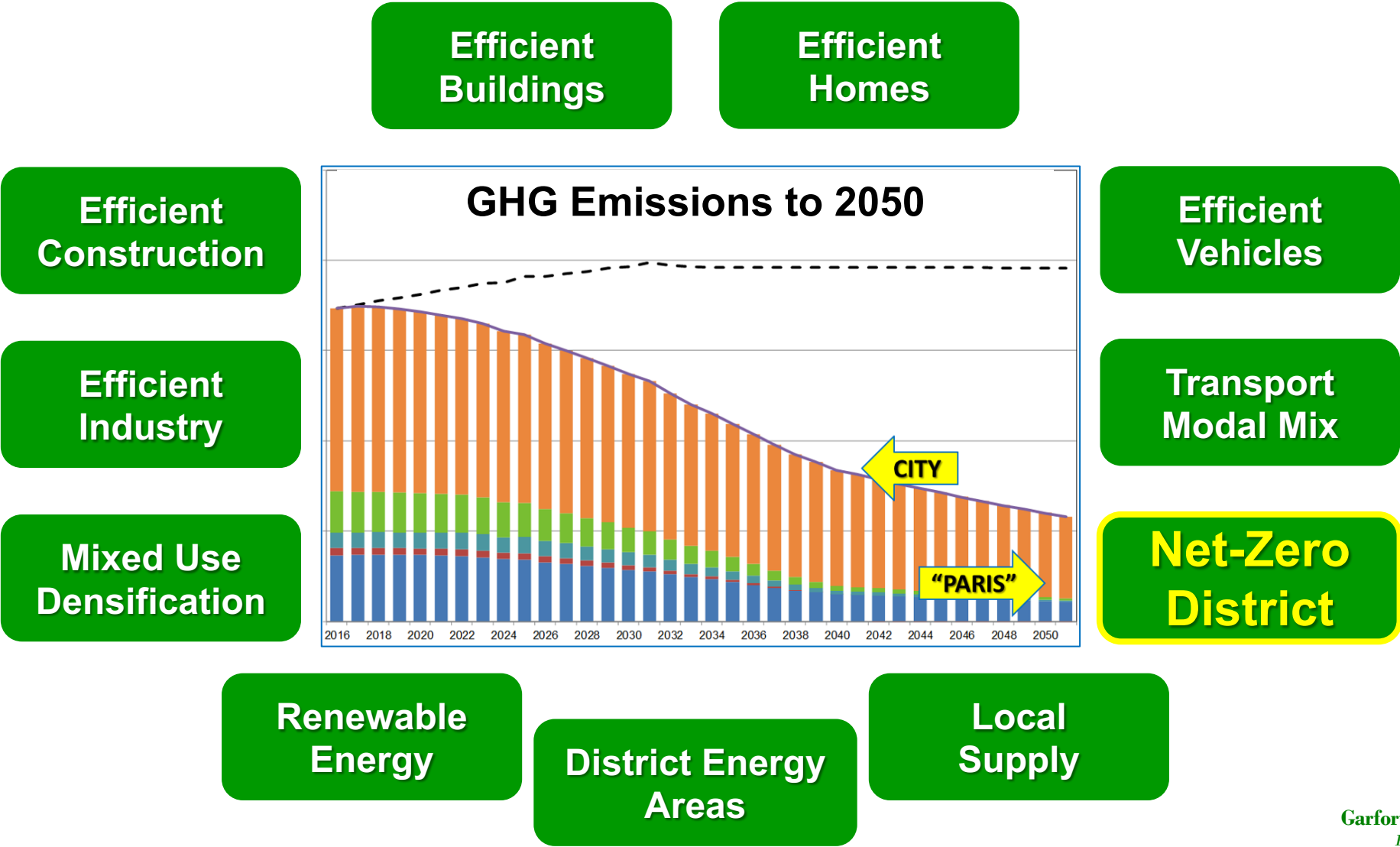
# Growth Neighbourhoods *CEERP Designations*



## Heritage Heights – Green Community

# CEERP Context

## *Heritage Heights - Net Zero Neighbourhood*



# Heritage Heights Secondary Planning Background

# Heritage Heights Community Energy Plan

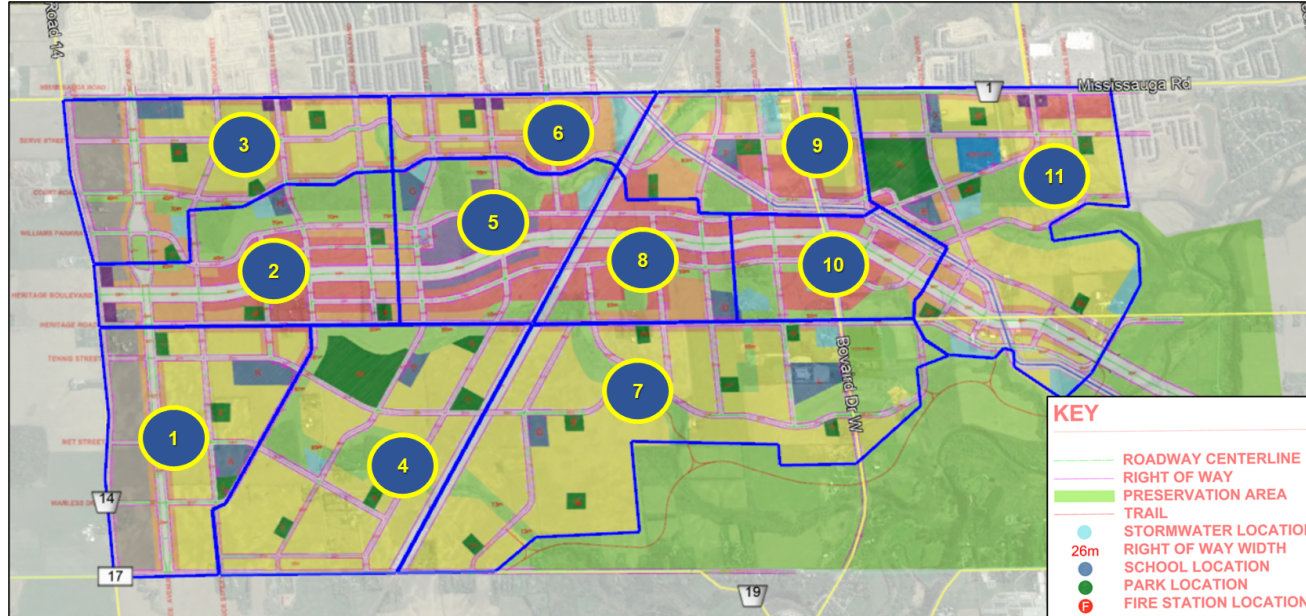
## *Policy Development Process*

- CEP will provide high-level strategic direction to integrate energy into the HH Secondary Planning Area (SPA) and land-use planning
- Energy policy framework will be developed for the SPA as a whole and by Spatial Planning Zones (SPZ)
- Energy policies will reflect different land uses within the SPA including energy implications for urban design and planning policy.
- Heritage Heights CEP will guide future policies and development review processes at the Block Plan, Draft Plan and Site Plan stages to promote strategic implementation and ensure the CEERP energy and climate goals are realized.



# Conceptual Land-Use Plan – July 2021

## *Built-form Summary*



### Building Archetypes for Energy Demand Modelling:

- Single Detached
- Single Semi-detached
- Single Townhouse
- Multi-unit residential – Low / Mid / High Rise
- Elementary & Secondary School
- Retail
- Food Service
- Office
- Light Industrial
- Acute-care Hospital
- Recreation Facilities

### Five primary neighborhood types:

- Light Industrial
- High density residential (125 to 250 units/ha) including mixed use.
- Medium density residential (50 to 100 units)
- Low density residential (20 to 50 units)
- Wellness District

### One Distinctive Road Form

- Urban Boulevard

# Heritage Heights Community Energy Plan

## *Framing Goals*

Goal	2041 CEERP Goal	2051 Heritage Heights Framing Goal
<b>Emissions</b>	<b>50% below 2016 Baseline</b> <i>(1.8 tonnes/capita)</i>	<b>1.1 tonnes/capita</b> <i>(90% below 2016 City Baseline)</i>
<b>Economic</b>	<b>Retain &gt; \$28 billion energy costs</b>	<b>Retain &gt; \$8 billion energy costs</b>
<b>Energy</b>	<b>50% below 2016 Baseline</b> <i>(75 GJ/capita)</i>	<b>45 GJ/capita</b> <i>(&gt;70% below 2016 City Baseline)</i>

CEP 2051 Framing Goals consistent with the Secondary Planning Area contribution to the 2041 CEERP Goals

# Simulation Background

# Heritage Heights CEP Simulation

## *Pivotal Assumptions*

- Measures in CEP simulation follow CEERP recommendations
- Start on Day-One *“30-years is not long enough for a rework”*
- Built-Environment
  - *Above-code efficiency*
  - *Solar Power and Heat*
  - *Medium and High Density served by district heating and cooling*
  - *Low Density residential served by electricity only*
- Transportation
  - *Pedestrian and bike friendly neighbourhoods*
  - *Convenient access to bus and train*
  - *Designed for all-electric vehicle future*
- Institutional – Energy Services
  - *District Energy Utility supplies heating and cooling service*
  - *Natural gas limited to neighbourhood energy centres and industry*



# Heritage Heights

## *Net-Zero Neighbourhood*

Walkable – Mixed use – High job/resident ratio

New Construction  
Near Passive

Any Existing Buildings  
Efficiency & DE retrofit

Building Integrated PV



<15 min walk / cycle /  
e-cycle to transit

Structured for scale  
modal transfers

Structured to maximize  
LEV use

Thermal services run by DECo : Gen 4/ 5 District Energy & Building-oriented

Thermal Supply Portfolio – CHP / HOB / Chiller / Solar Heat / Heat Pumps / Recovery...

Comprehensive vehicle charging infrastructure

“Smart Energy Neighbourhood”

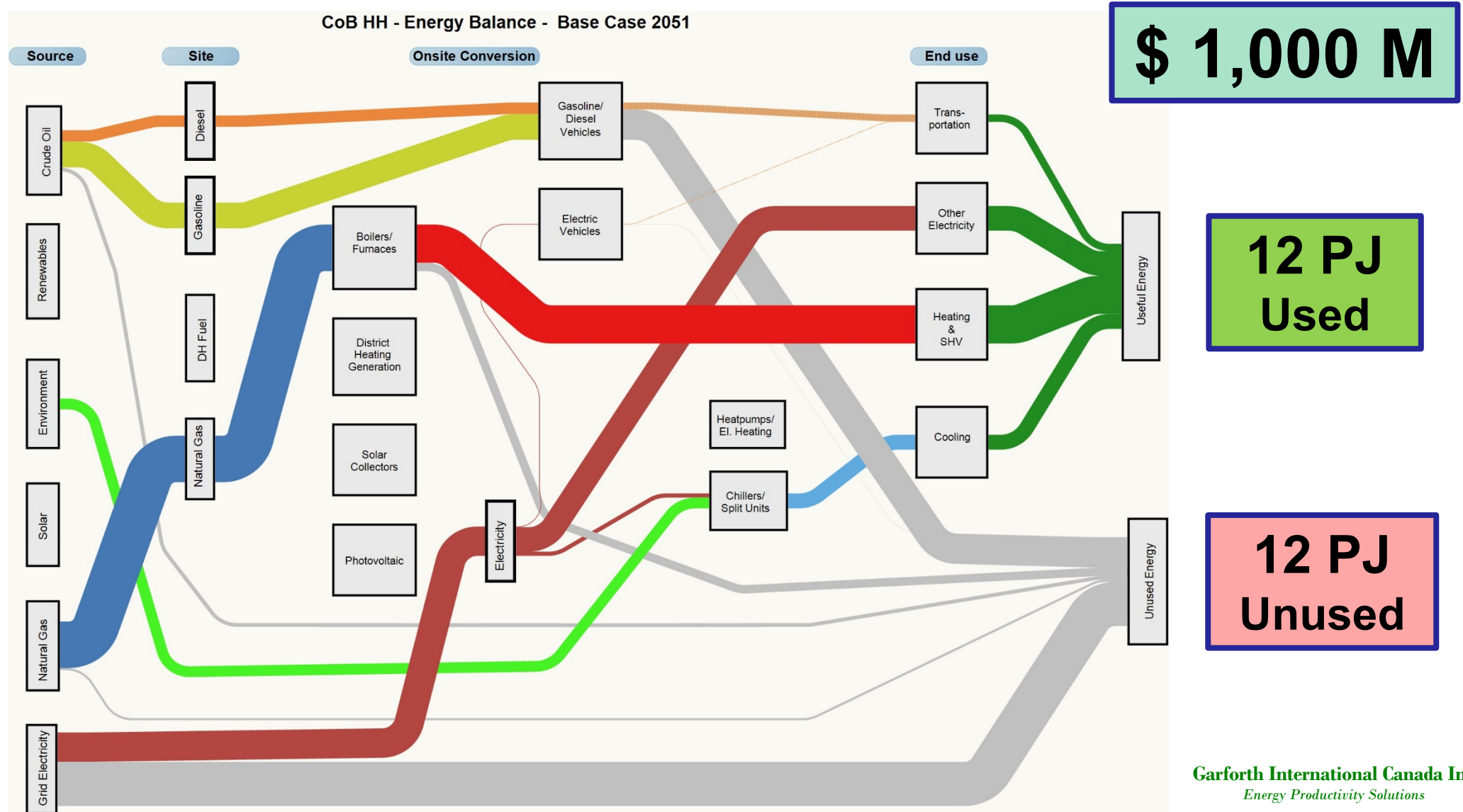
Homes – Buildings – Transportation – Intelligent Load Management

Early Alignment Key to Creating “Green Neighbourhood”

# Simulation Results

## Local Energy System in 2051 – Business-as-Usual

**24 PJ**  
Input



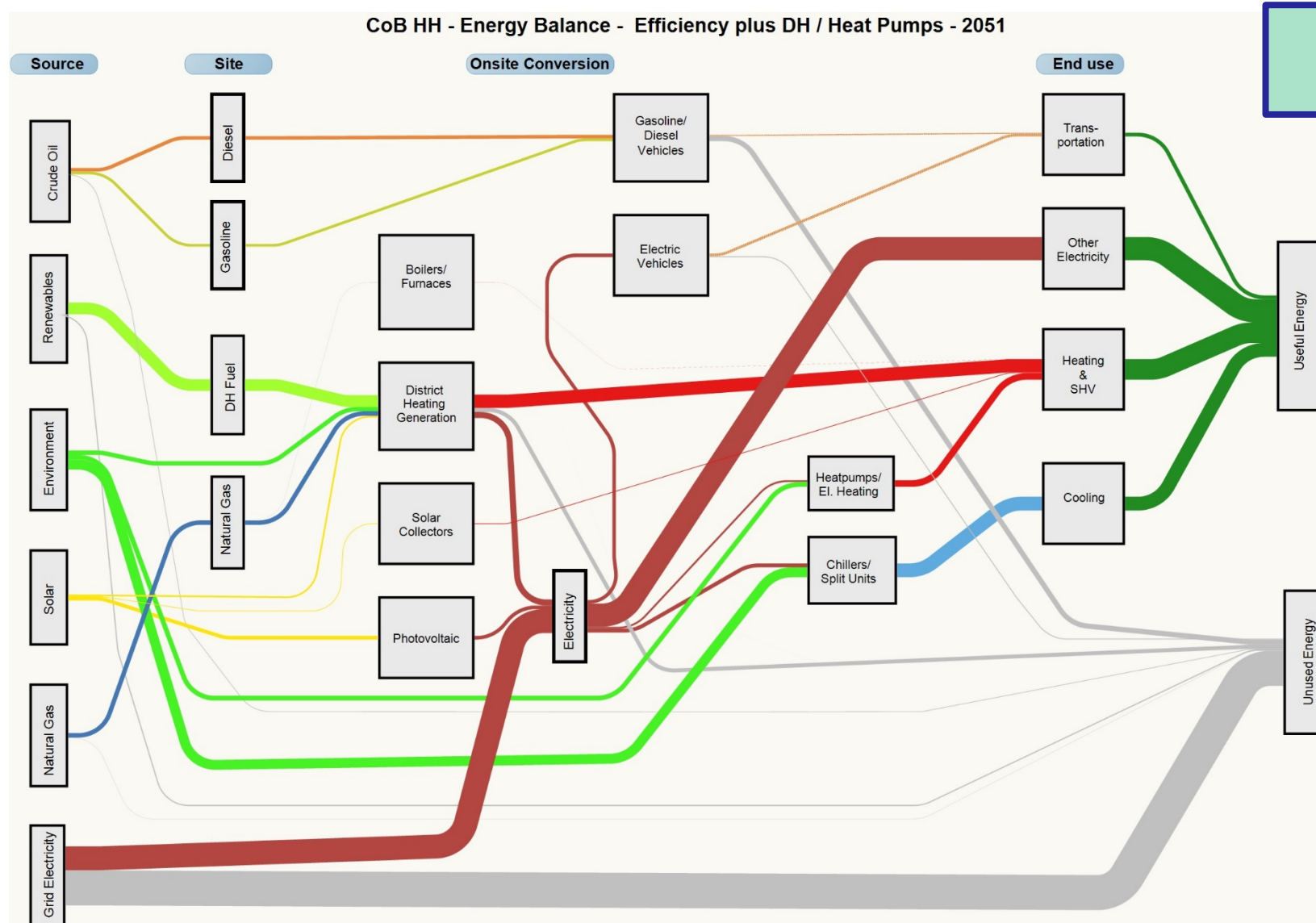
$PJ = \text{petajoule} = 10^{15} J$

# Simulation Results

## Local Energy System in 2051 – Transformed

**13 PJ**  
Input

$PJ = \text{petajoule} = 10^{15} J$



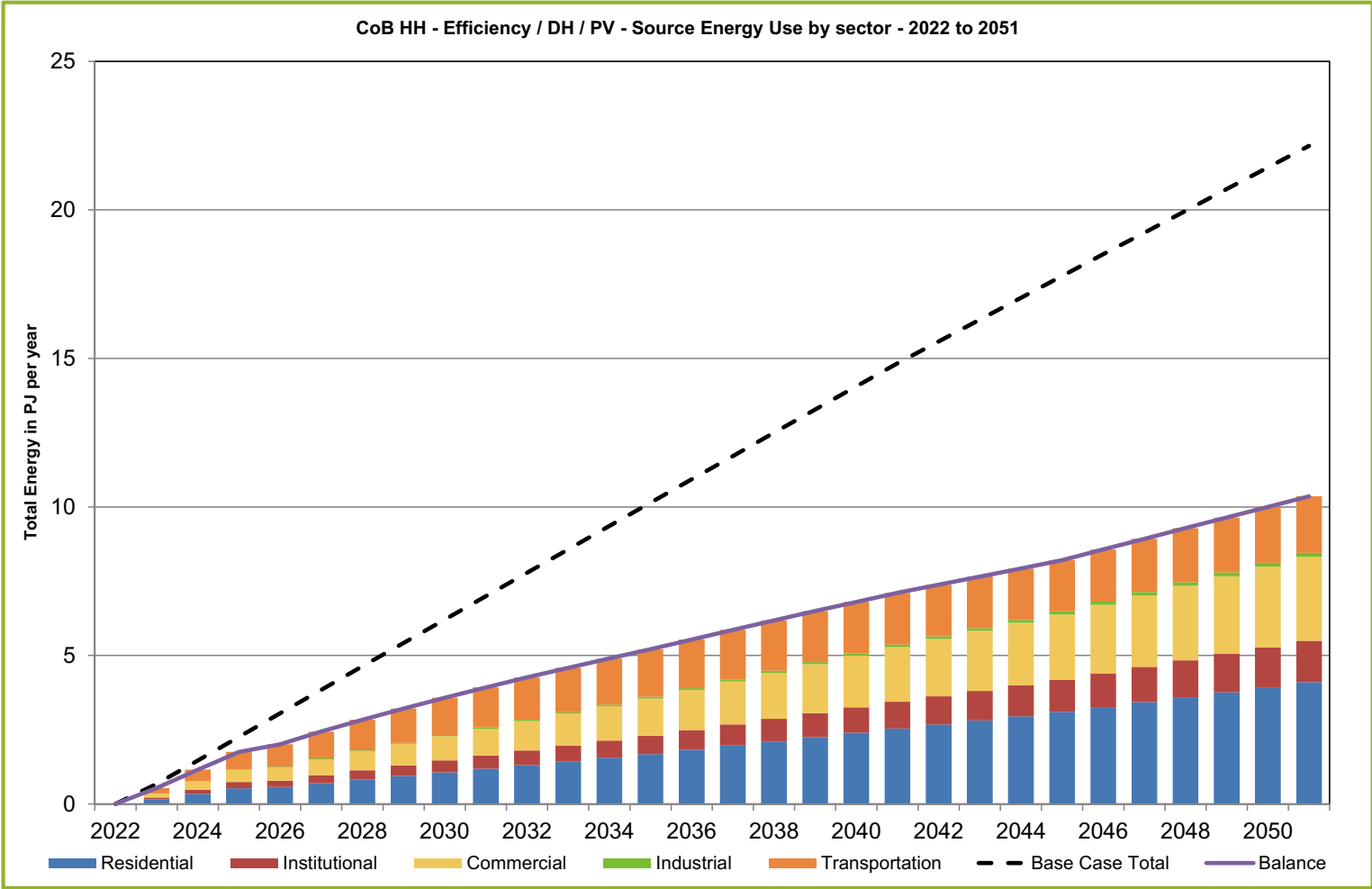
**\$350M**

**8 PJ**  
Used

**5 PJ**  
Unused

# Simulation Results

## *Source Energy by Sector*

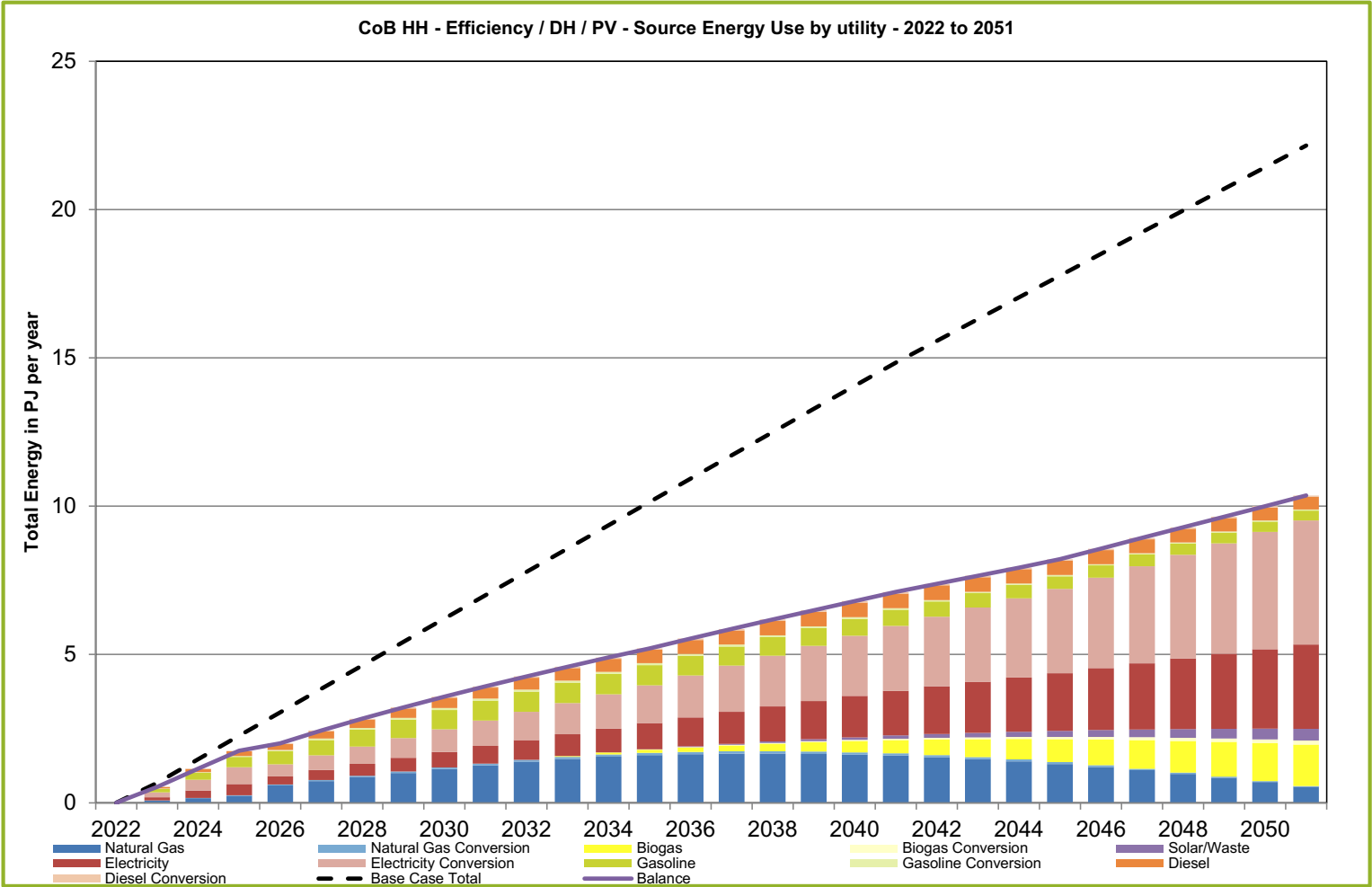


0 TJ in 2022 to 10 TJ in 2051



# Simulation Results

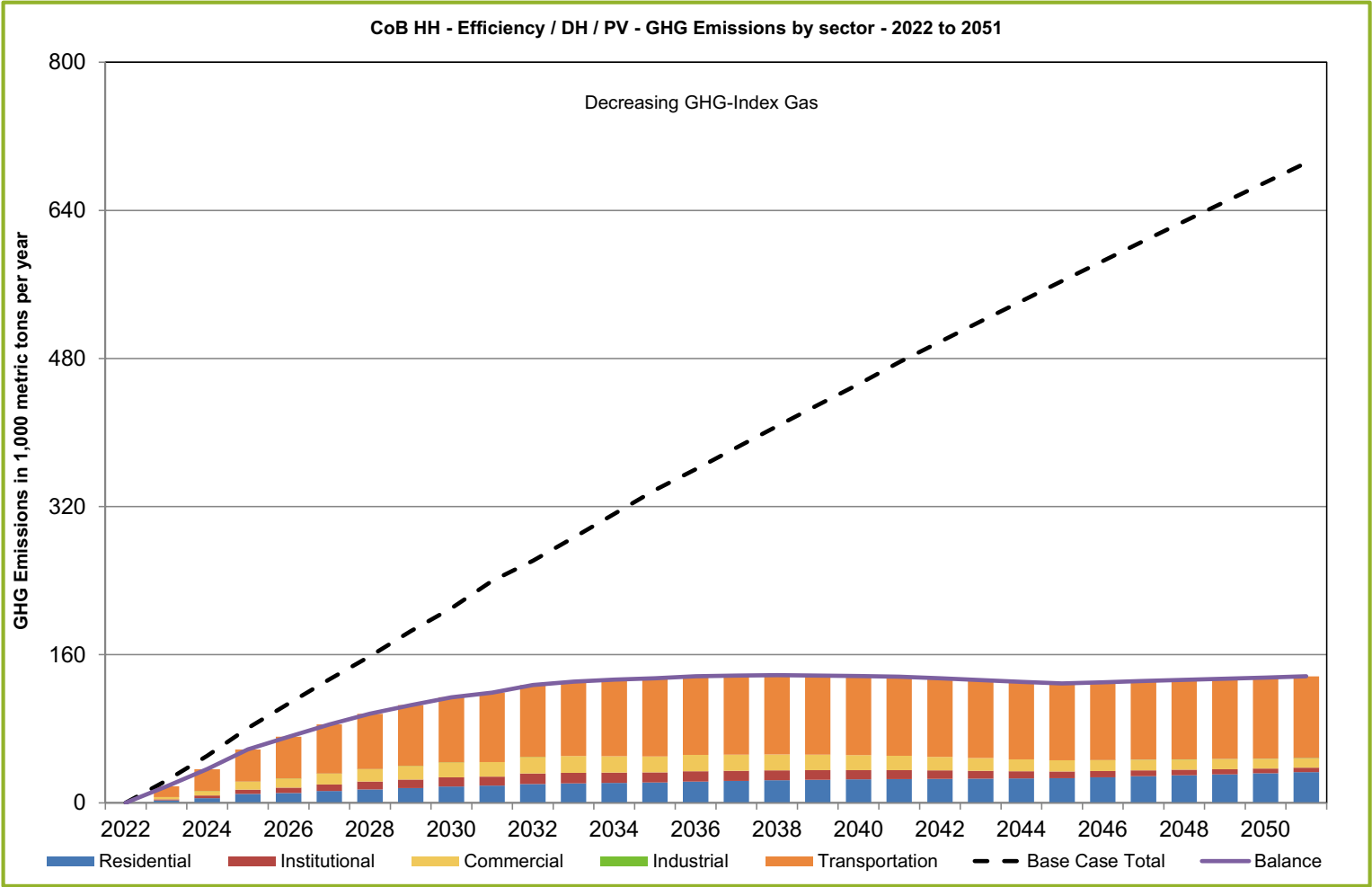
## Source Energy by Utility



0 TJ in 2022 to 10 TJ in 2051

# Simulation Results

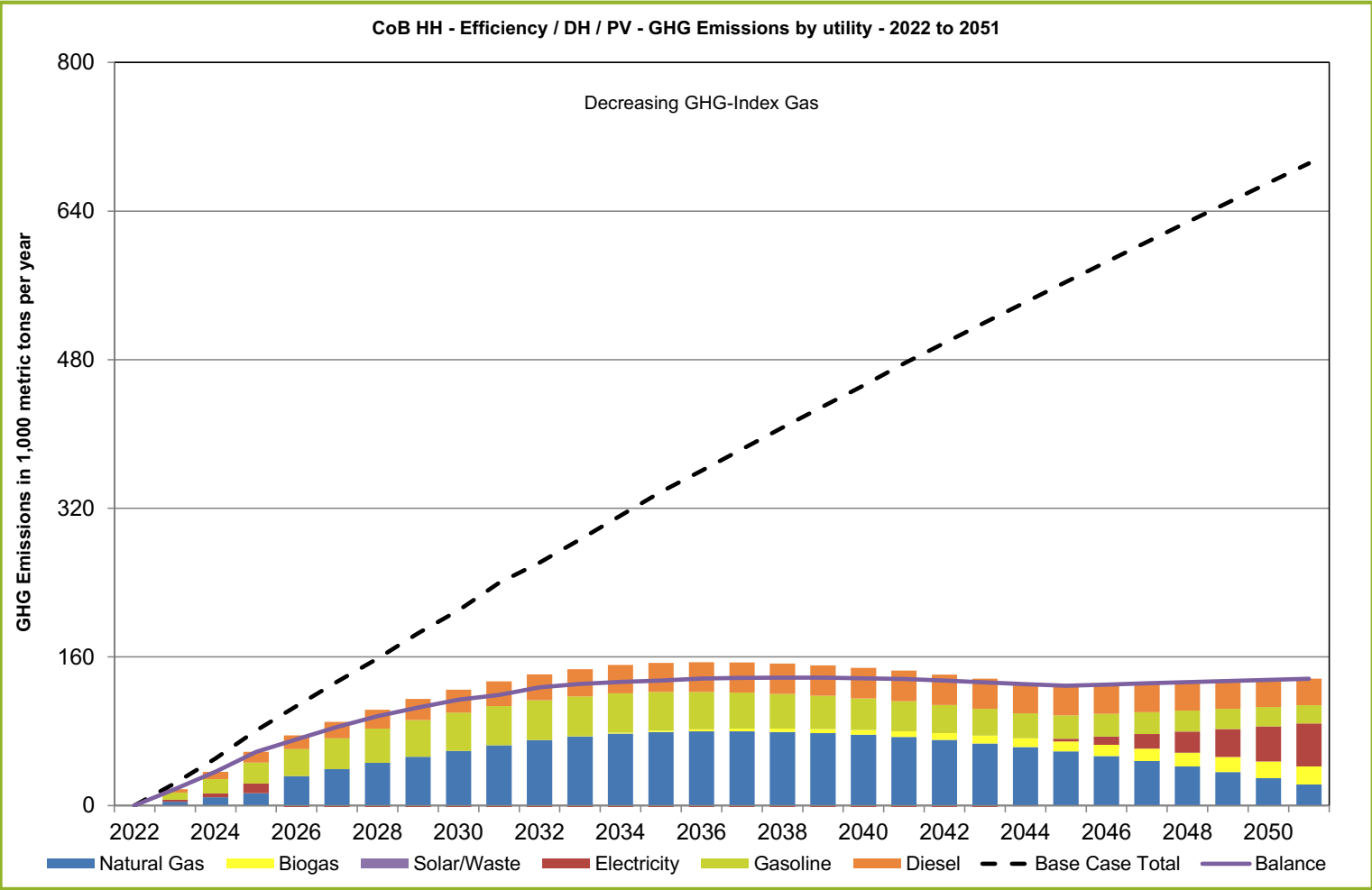
## *Greenhouse Gas Emissions by Sector*



0 mt in 2022 to 137,000 mt in 2051

# Simulation Results

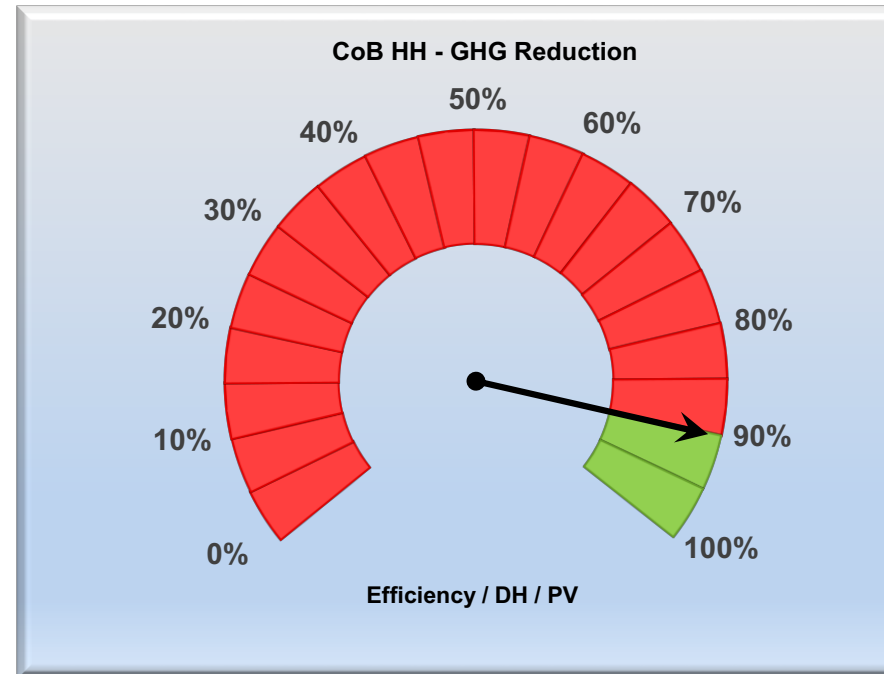
## *Greenhouse Gas Emissions by Utility*



0 mt in 2022 to 137,000 mt in 2051

# CoB HH - Efficiency / DH / PV

## *Achieved targets 2051 versus 2023*



**GHG Target 1.1 tonnes/capita**

**Between \$7.7Bn and \$13.1 Bn Avoided Cost**



# Thank You

**Garforth International Canada Inc**  
*Energy Productivity Solutions*

