



Heritage Heights

A Brampton Green Community

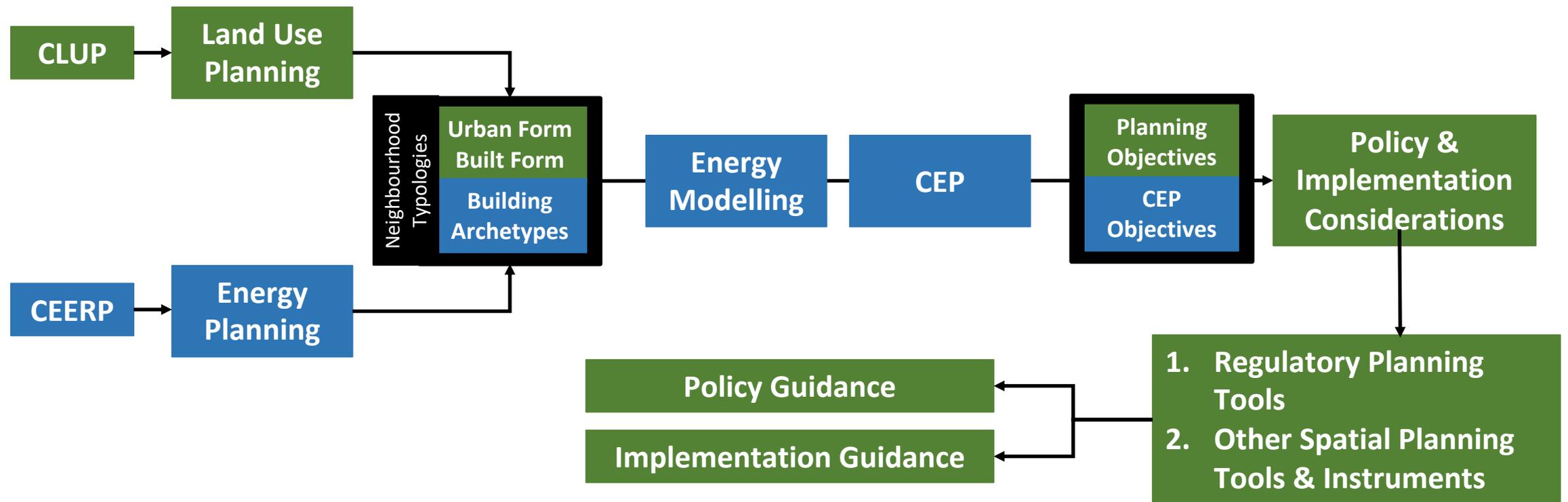
Heritage Heights Community Energy Plan

Brampton Environment Advisory Committee

December 1, 2021

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.*

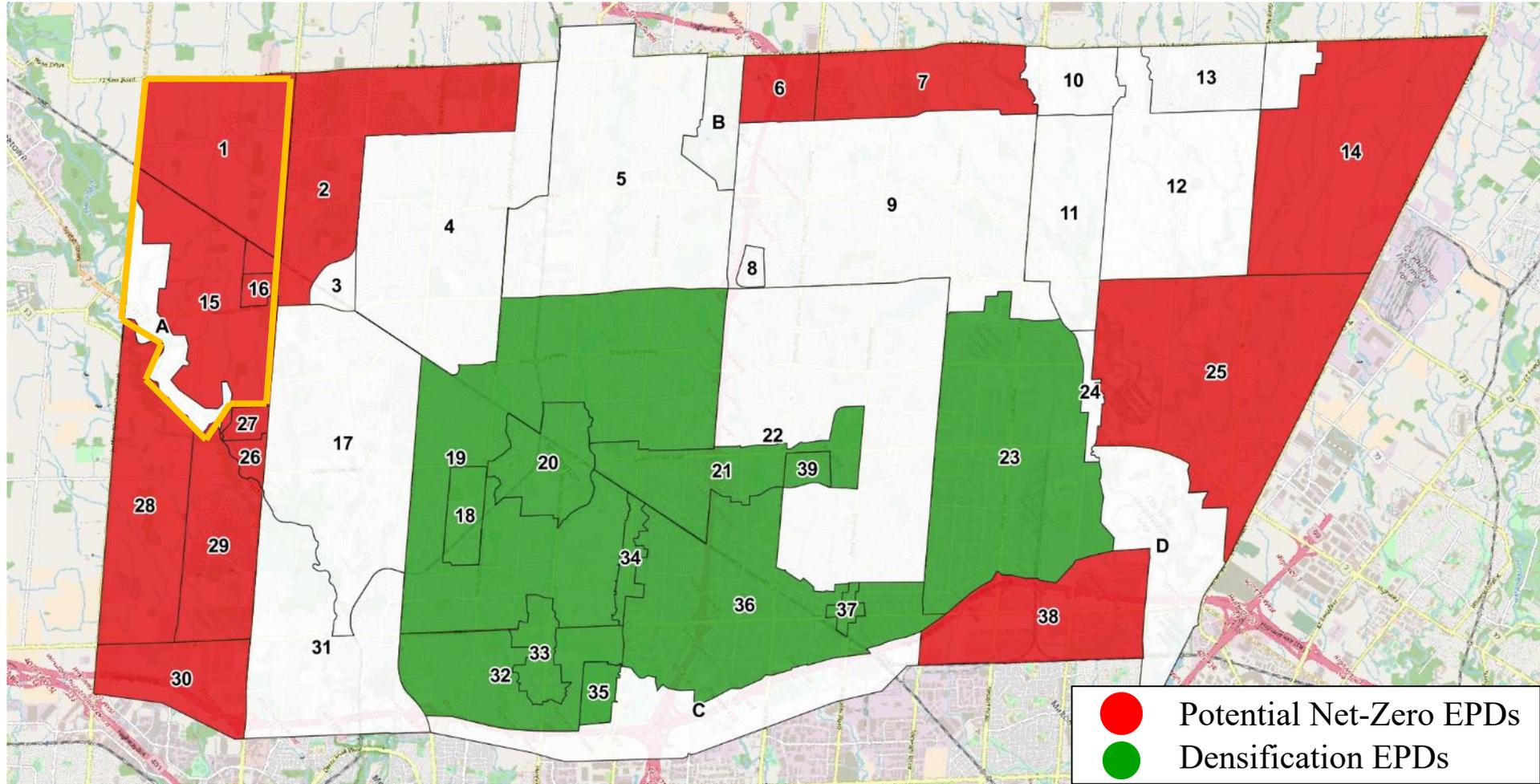
■ Economic

- *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.*

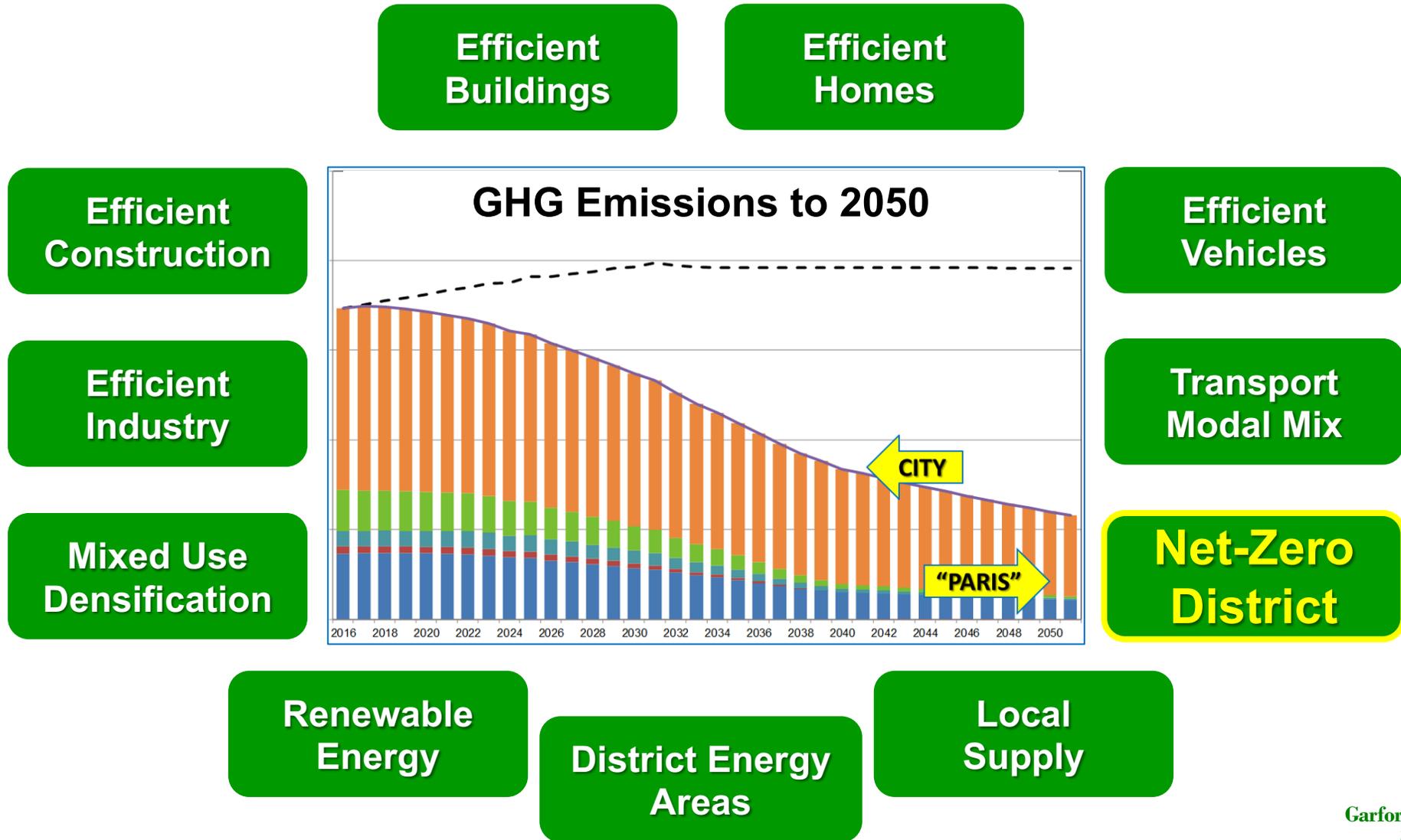
Growth Neighbourhoods *CEERP Designations*



Heritage Heights – Green Community

CEERP Context

Heritage Heights - Net Zero Neighbourhood



Heritage Heights Secondary Planning Background

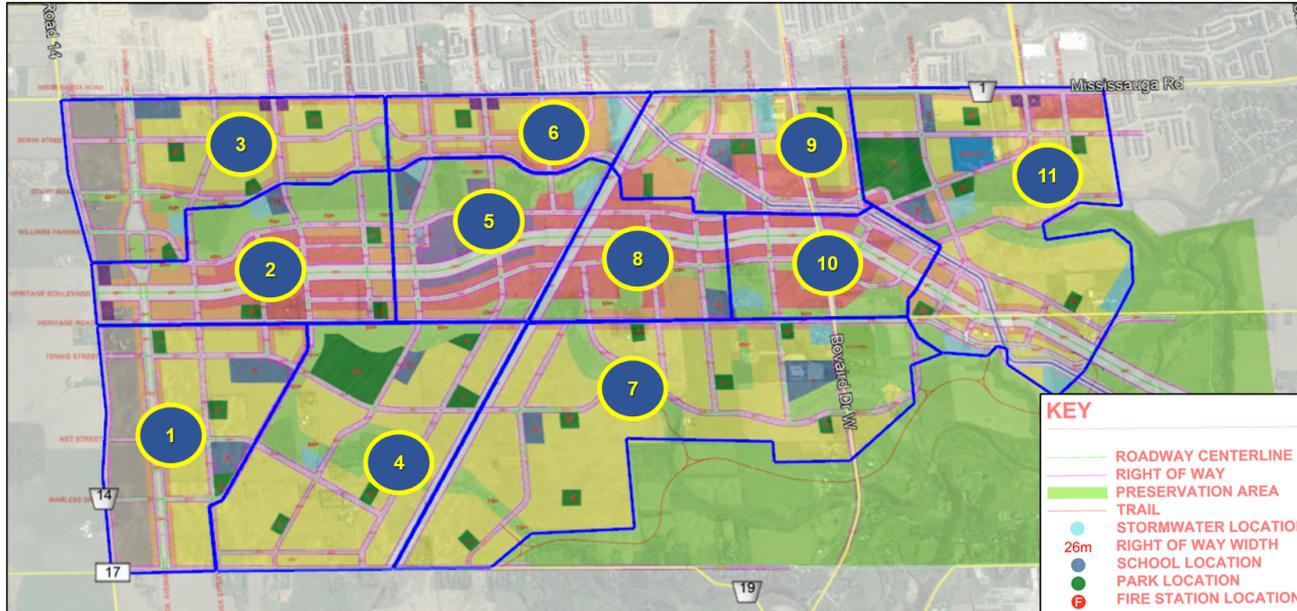
Heritage Heights Community Energy Plan

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
Emissions	50% below 2016 Baseline <i>(1.8 tonnes/capita)</i>	1.1 tonnes/capita <i>(90% below 2016 City Baseline)</i>
Economic	Retain > \$28 billion energy costs	Retain > \$8 billion energy costs
Energy	50% below 2016 Baseline <i>(75 GJ/capita)</i>	45 GJ/capita <i>(>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”

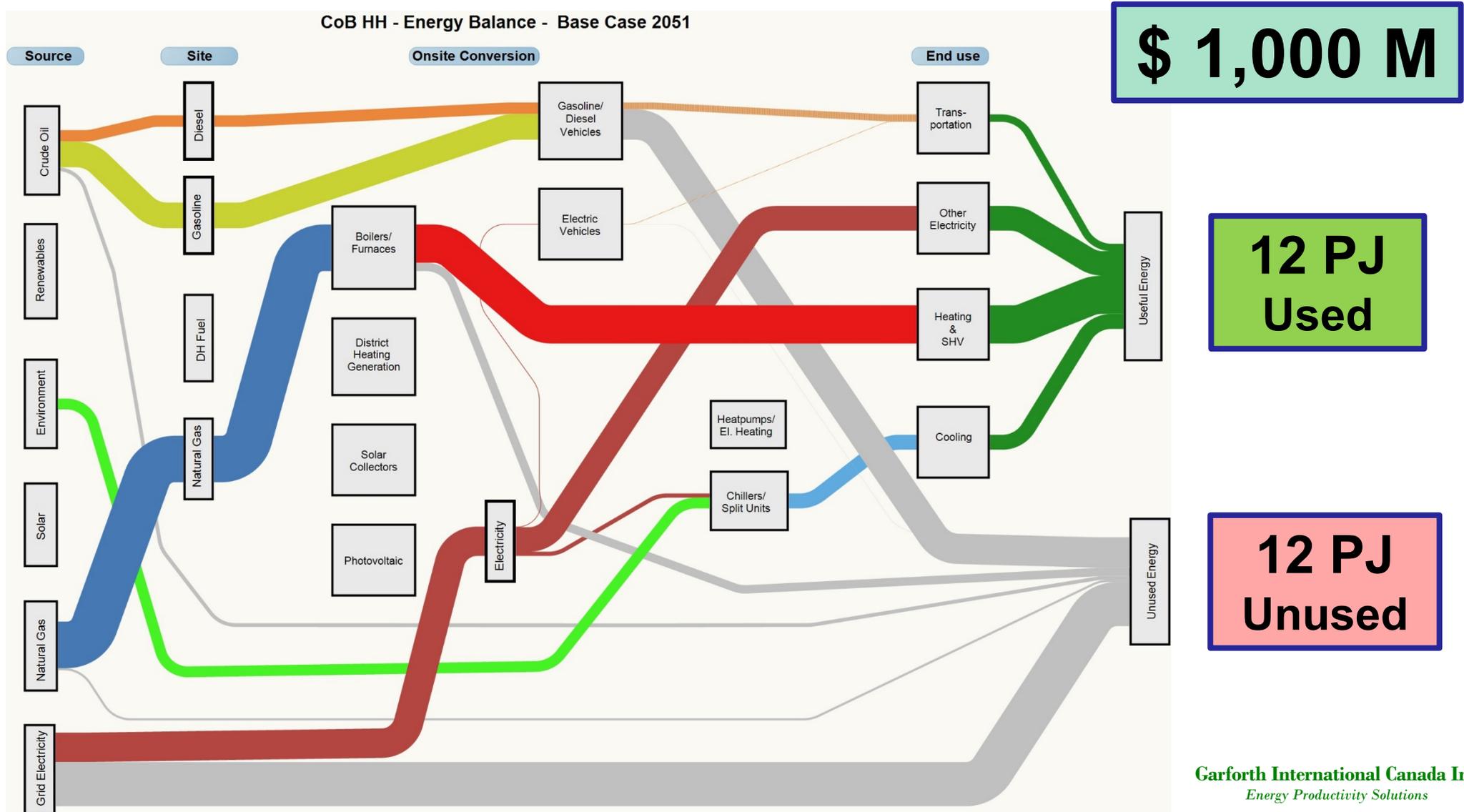
Homes – Buildings – Transportation – Intelligent Load Management

Early Alignment Key to Creating “Green Neighbourhood”

Simulation Results

Local Energy System in 2051 – Business-as-Usual

24 PJ
Input

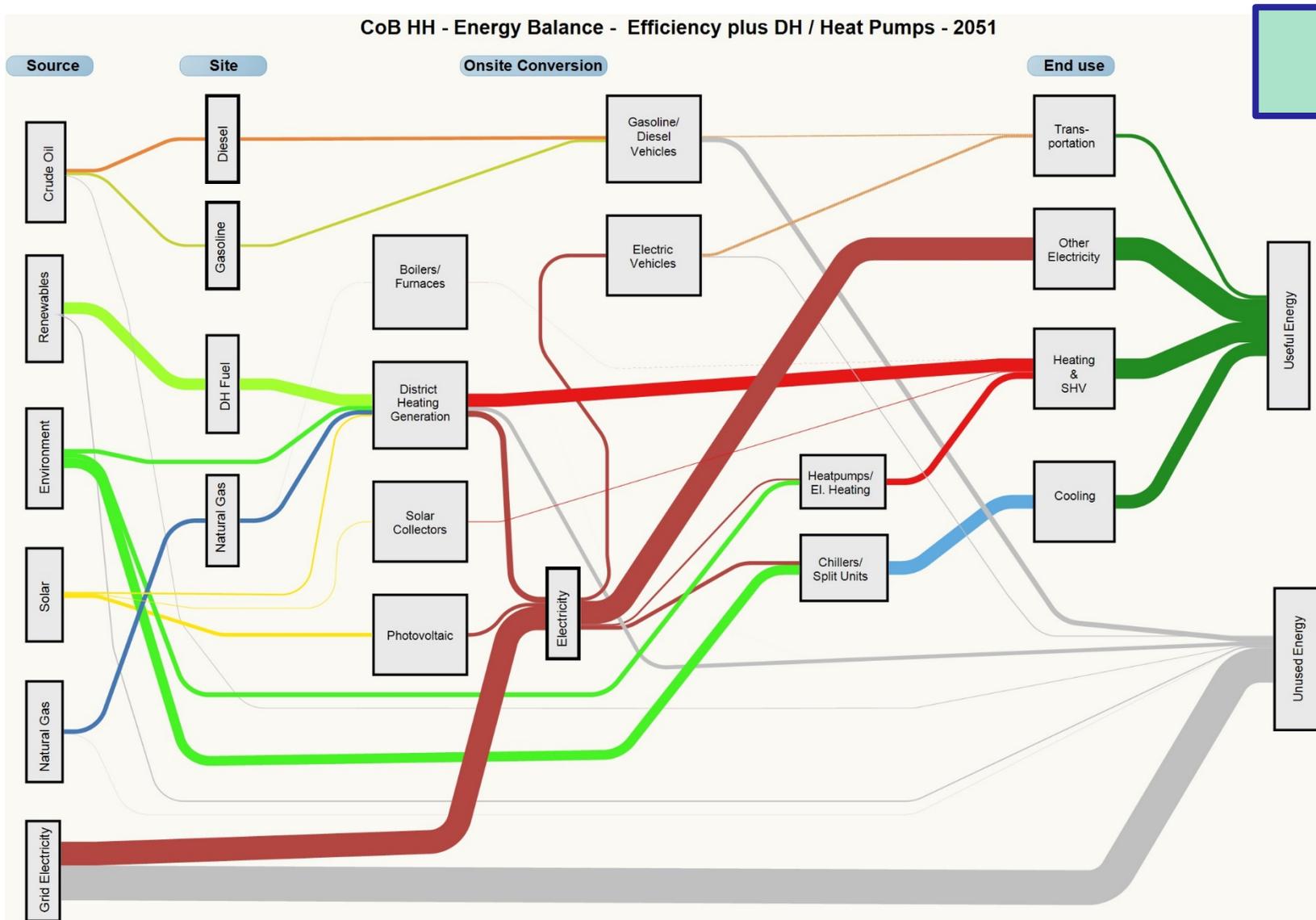


PJ=petajoule = 10^{15} J

Simulation Results

Local Energy System in 2051 – Transformed

13 PJ
Input



\$350M

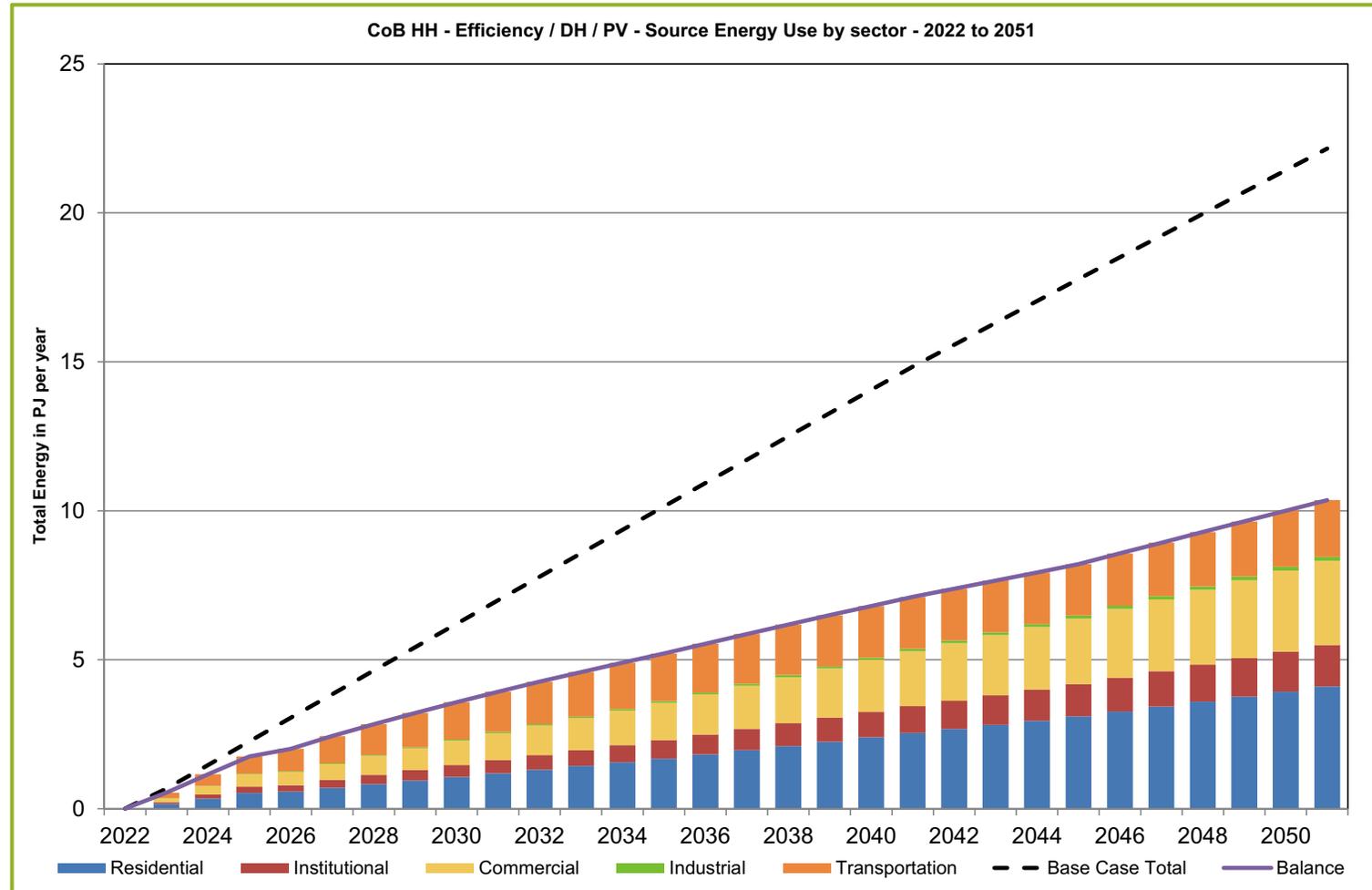
8 PJ
Used

5 PJ
Unused

PJ=petajoule = 10¹⁵ J

Simulation Results

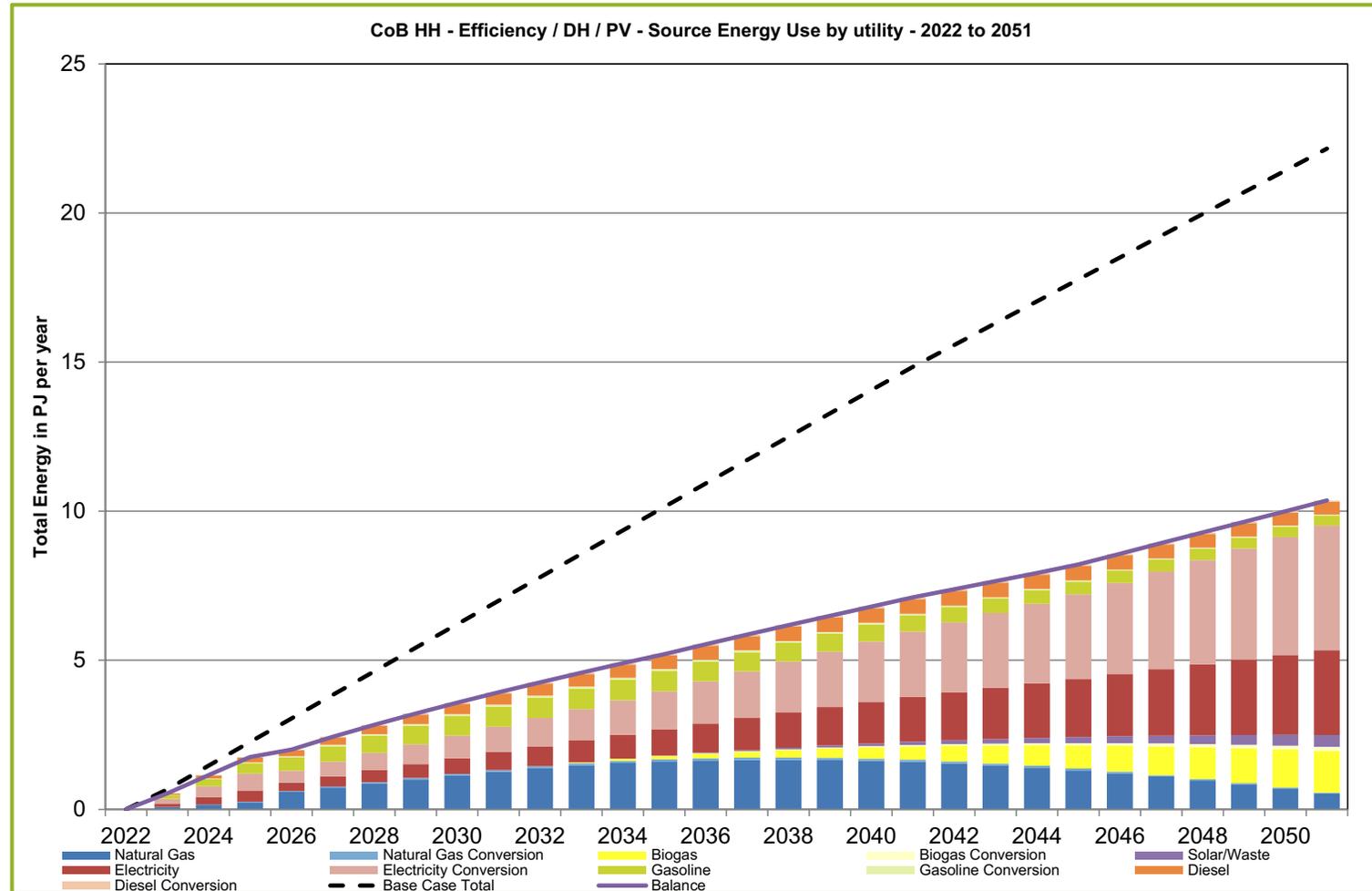
Source Energy by Sector



0 TJ in 2022 to 10 TJ in 2051

Simulation Results

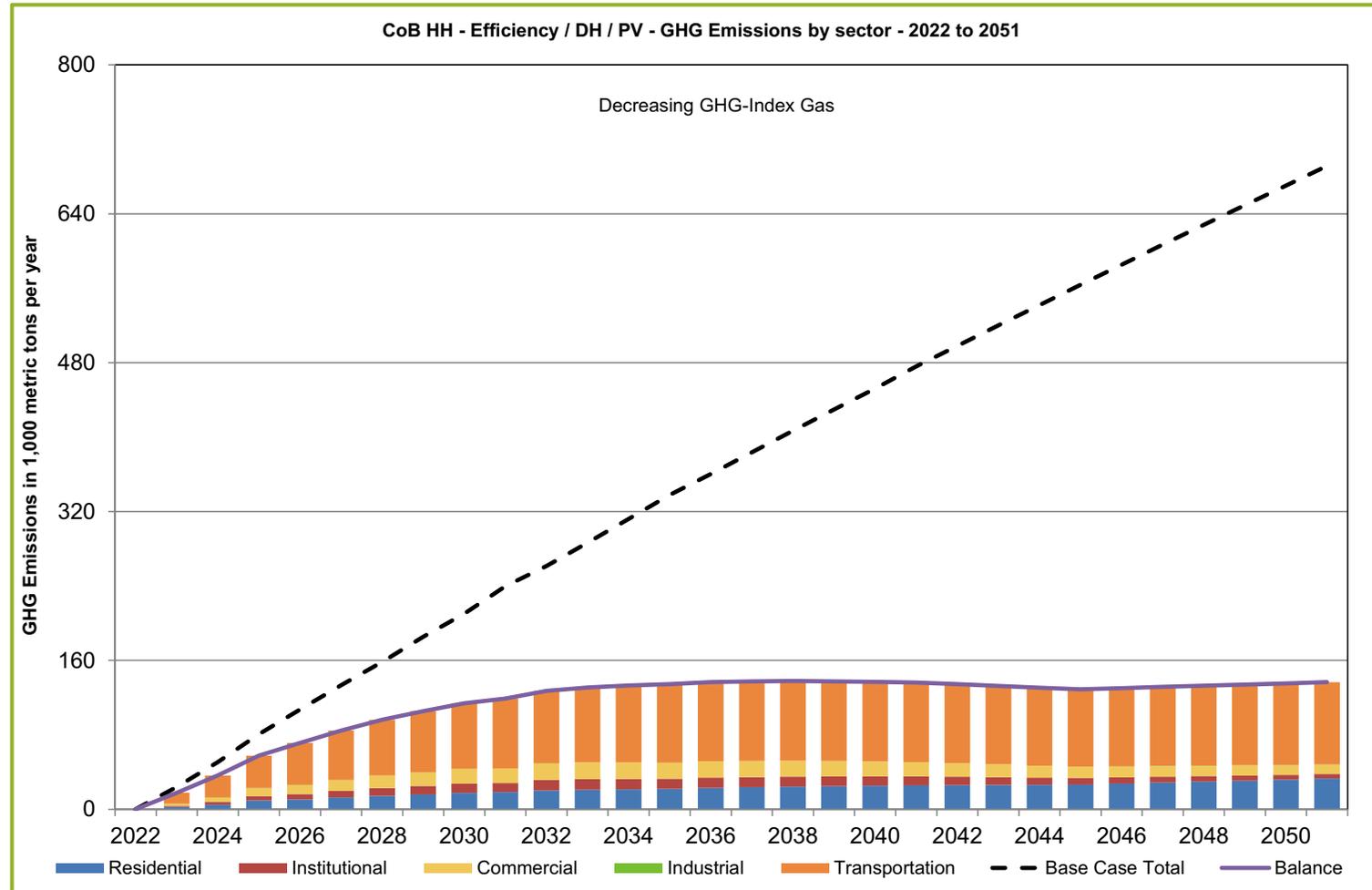
Source Energy by Utility



0 TJ in 2022 to 10 TJ in 2051

Simulation Results

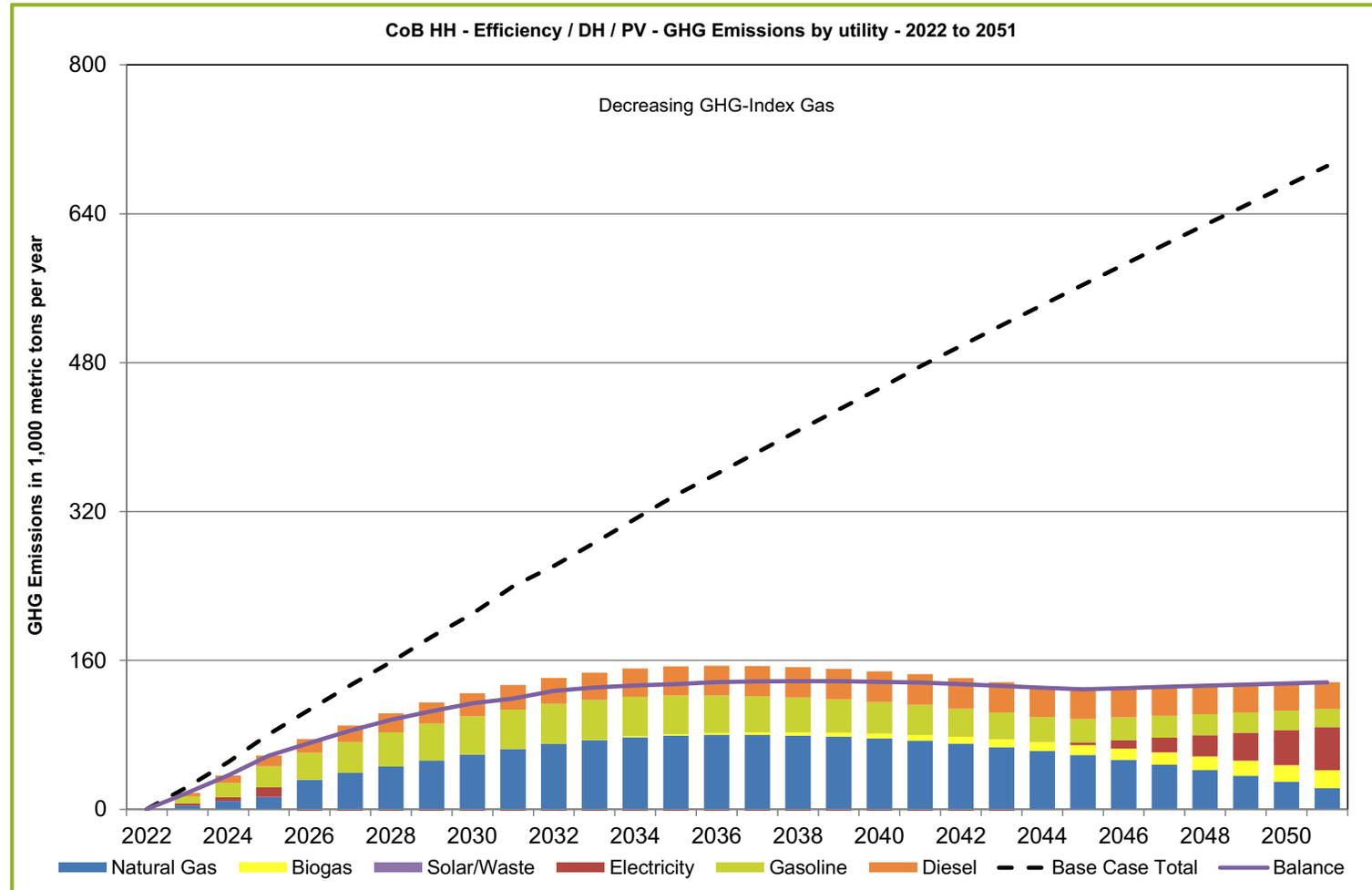
Greenhouse Gas Emissions by Sector



0 mt in 2022 to 137,000 mt in 2051

Simulation Results

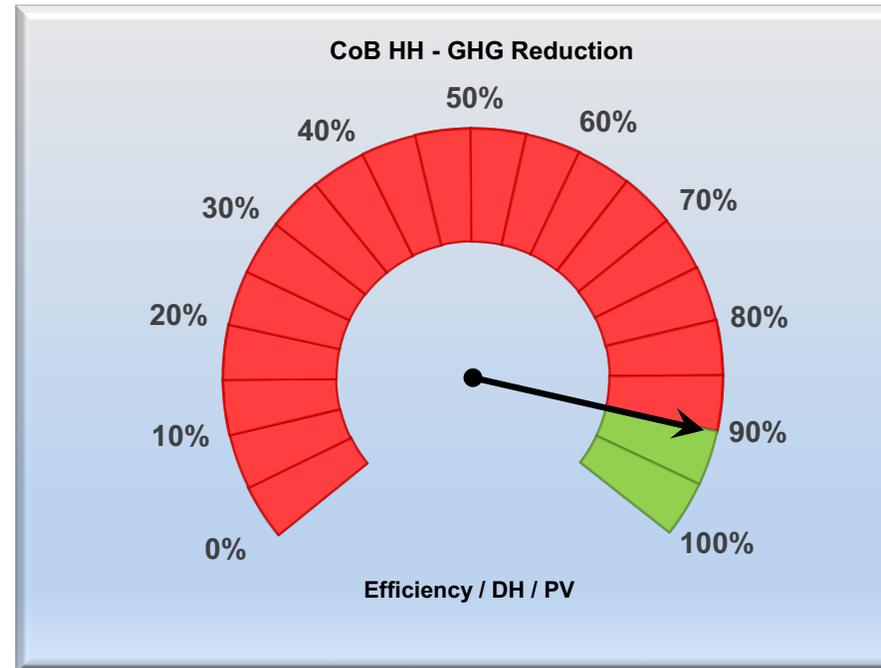
Greenhouse Gas Emissions by Utility



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

