



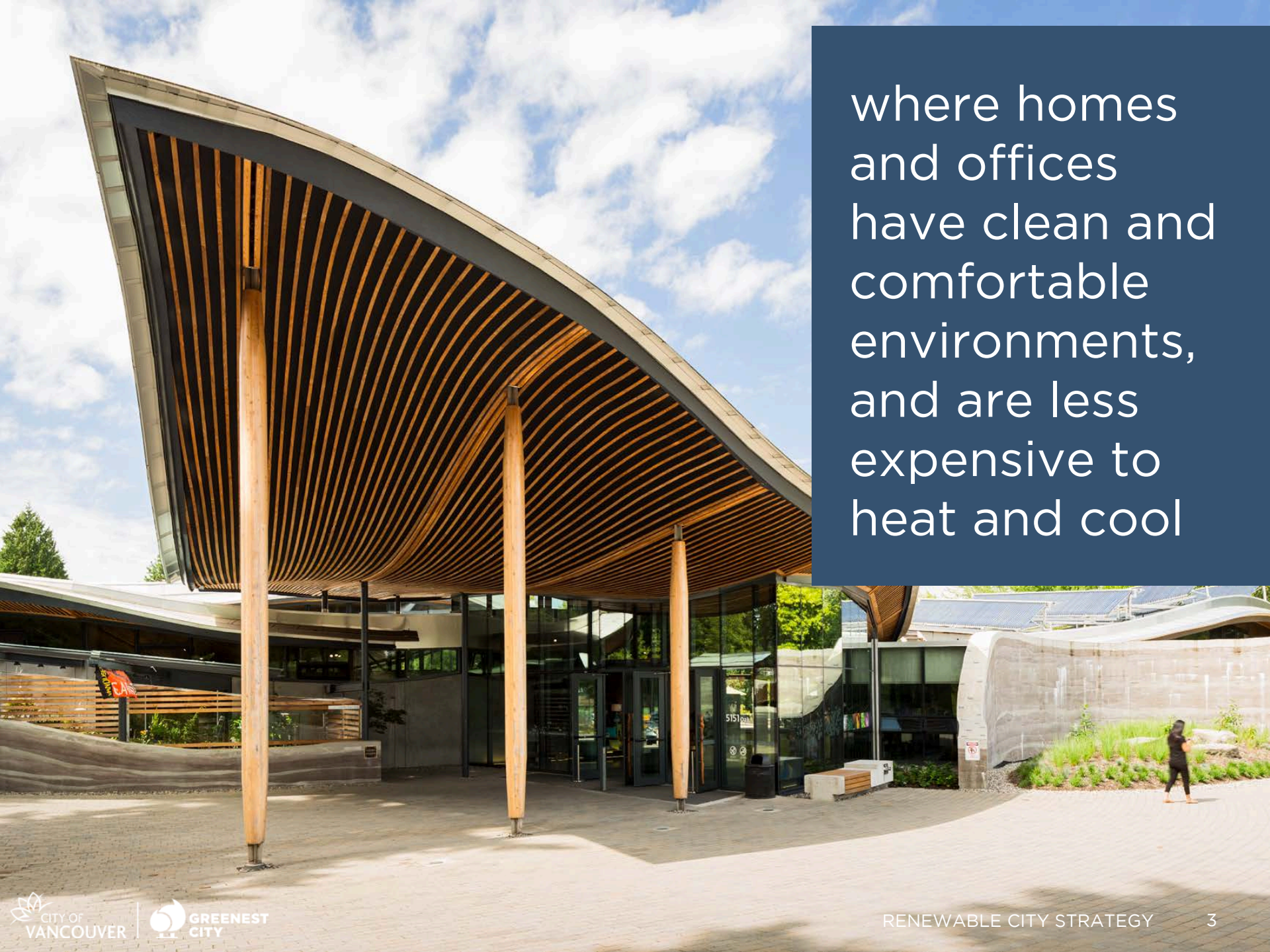
# RENEWABLE CITY STRATEGY

November 3, 2015





Imagine a city  
where jobs and  
businesses are  
diverse and  
economically  
strong



where homes  
and offices  
have clean and  
comfortable  
environments,  
and are less  
expensive to  
heat and cool

where the  
transportation  
system is  
abundant and  
efficient





a city that  
supports a  
thriving  
economy

while  
improving  
affordability  
and providing  
citizens the  
opportunity to  
be healthy and  
mobile.



Imagine a city  
powered by  
renewable  
energy.



# Renewable City Strategy Development



- » Energy system & industry experts
- » Local & international thought-leaders





## 2015: Renewable City Public Consultation

- » 15 events
- » 43,000+ people included
- » 13,000+ people engaged



# GREENEST CITY

2020 ACTION PLAN



## Vancouver is primed for success

### GREENHOUSE GAS EMISSIONS PER-CAPITA (tonnes CO<sub>2</sub>e)

Stockholm 2012	3.0
Copenhagen 2011	3.9
<b>Vancouver 2014</b>	<b>4.2</b>
Tokyo 2010	4.7
Seattle 2012	5.9
San Francisco 2012	6.6



## GOAL

# VANCOUVER IS A CITY THAT USES ONLY RENEWABLE SOURCES OF ENERGY

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*renewable energy is naturally replenished as it is used*

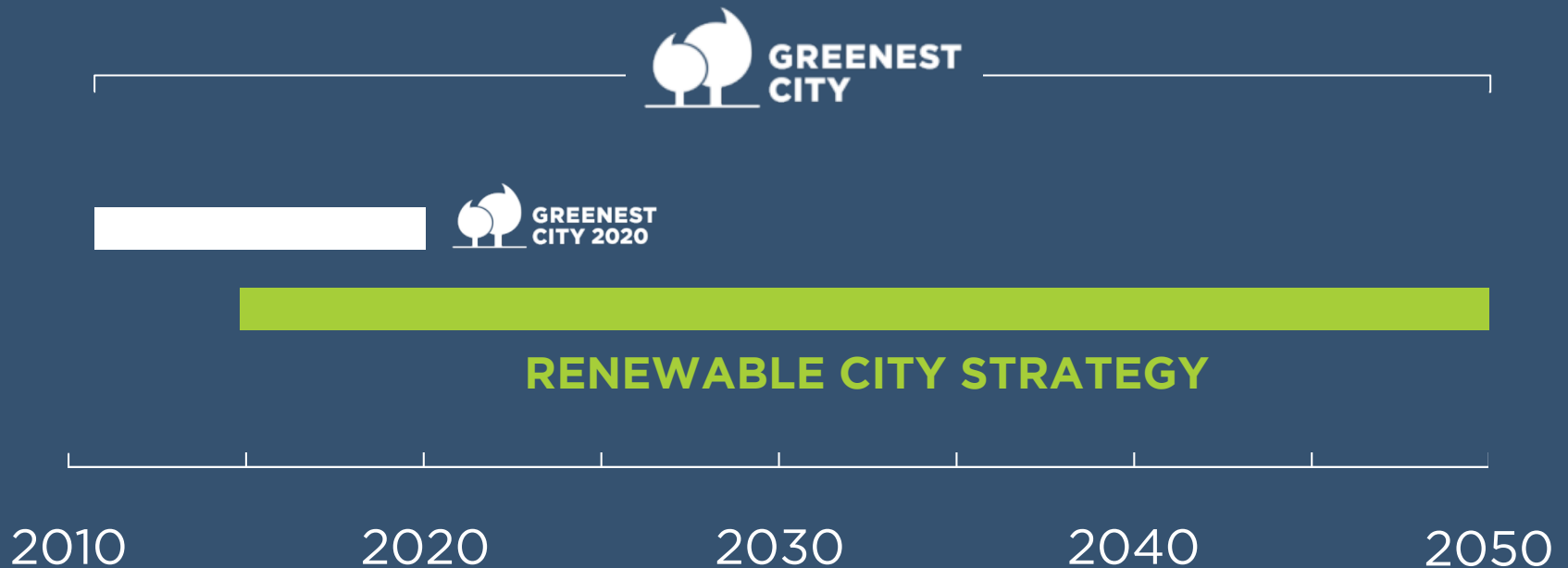
## TARGETS

Derive 100% of the energy used in Vancouver from renewable sources before 2050

Reduce greenhouse gas emissions by 80% below 2007 levels before 2050

# 2020 AND BEYOND

In March 2015, City Council renewed its commitment beyond 2020 to **a renewable future.**





Renewable City generates opportunities.





## ECONOMIC OPPORTUNITIES

Foster innovation

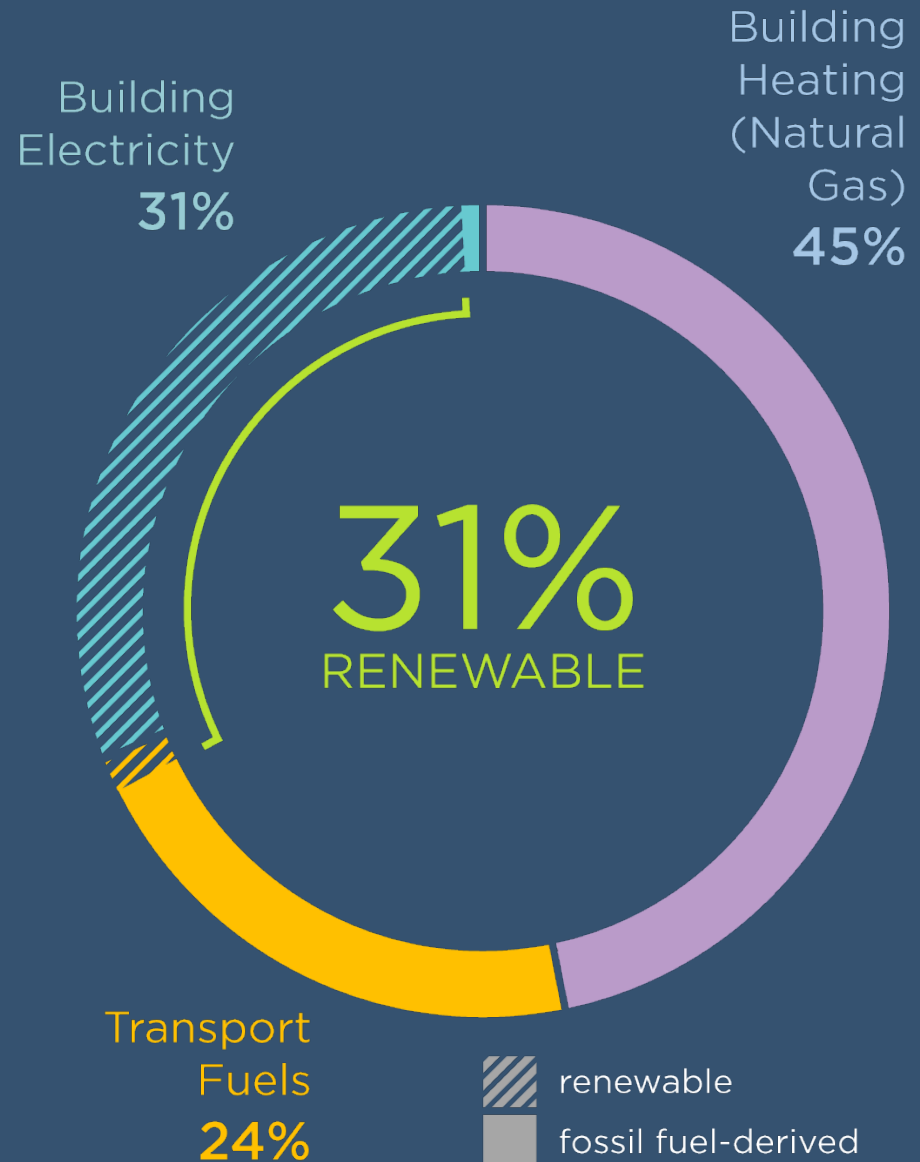
Strengthen businesses & economy

Attract “green capital”

We can do this.

31% is  
Vancouver's  
energy is  
already  
renewable.

ENERGY USED IN  
VANCOUVER IN 2014



We will need to **act** as well as **advocate**.

**CONTROL**

Building Standards  
Land Use  
Road Network

**SUPPORT**

Major Roads Network  
Waste Management  
City Services

**ADVOCACY**

Federal  
Government

Provincial  
Government

Regional  
Government



1

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REDUCE  
ENERGY USE

2

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INCREASE  
USE OF  
RENEWABLE  
ENERGY

3

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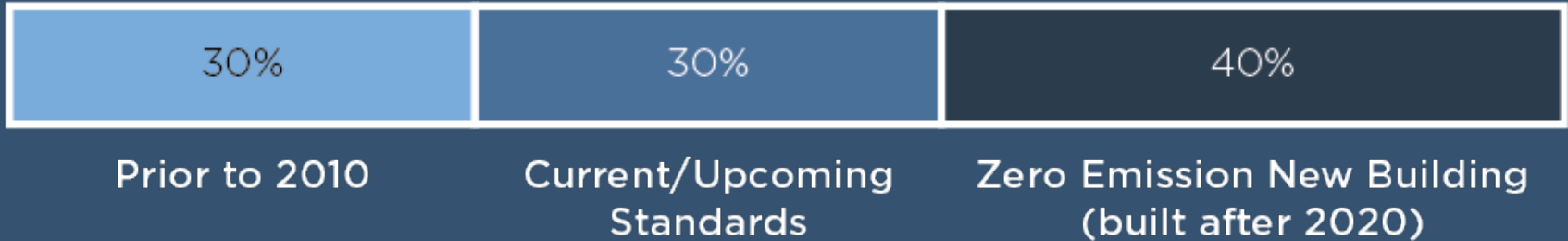
INCREASE  
**SUPPLY** OF  
RENEWABLE  
ENERGY

A strategic approach to 100% renewable

An aerial photograph of a modern city, likely Vancouver, showing a mix of high-rise buildings and green roofs. A prominent feature is a large, white, dome-shaped structure, possibly a sports arena or a public building. The city is surrounded by water and mountains in the background. A semi-transparent blue box is overlaid on the center of the image, containing white text.

THE RENEWABLE CITY IN 2050 WILL HAVE  
**ZERO EMISSION BUILDINGS**  
THAT EMIT **NO GREENHOUSE GASES**  
FROM THEIR USE OF ENERGY

# VANCOUVER'S BUILDING STOCK IN 2050



## REDUCE ENERGY USE

- » Passive House
- » Equipment improvements

## INCREASE USE AND SUPPLY OF RENEWABLE ENERGY

- » On-site renewable power
- » Grid-supplied electricity
- » Neighbourhood renewable energy systems

**B.1** New buildings to be zero-emission by 2030



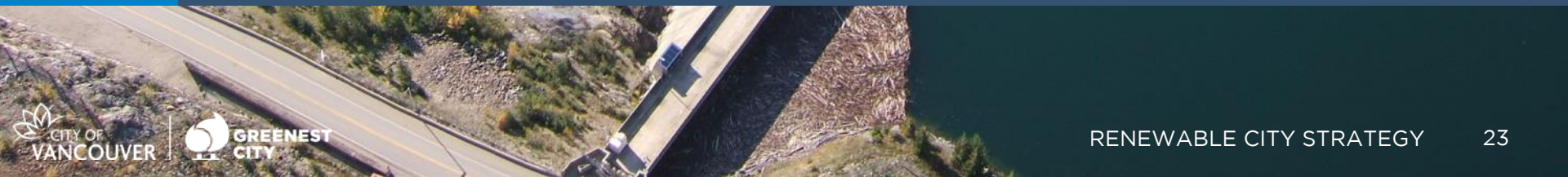
**B.2** Retrofit existing buildings to perform like new construction



**B.3** Expand existing and develop new Neighbourhood Renewable Energy Systems



**B.4** Ensure grid-supplied electricity is 100% renewable



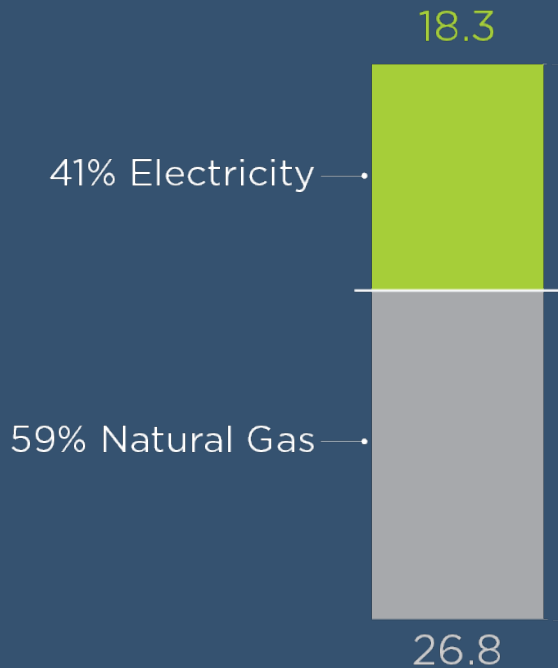
TOTAL  
ENERGY USE  
*in million GJ*

2014

45.1

RENEWABLE

41%



## BUILDING ENERGY USE IN VANCOUVER IN 2014

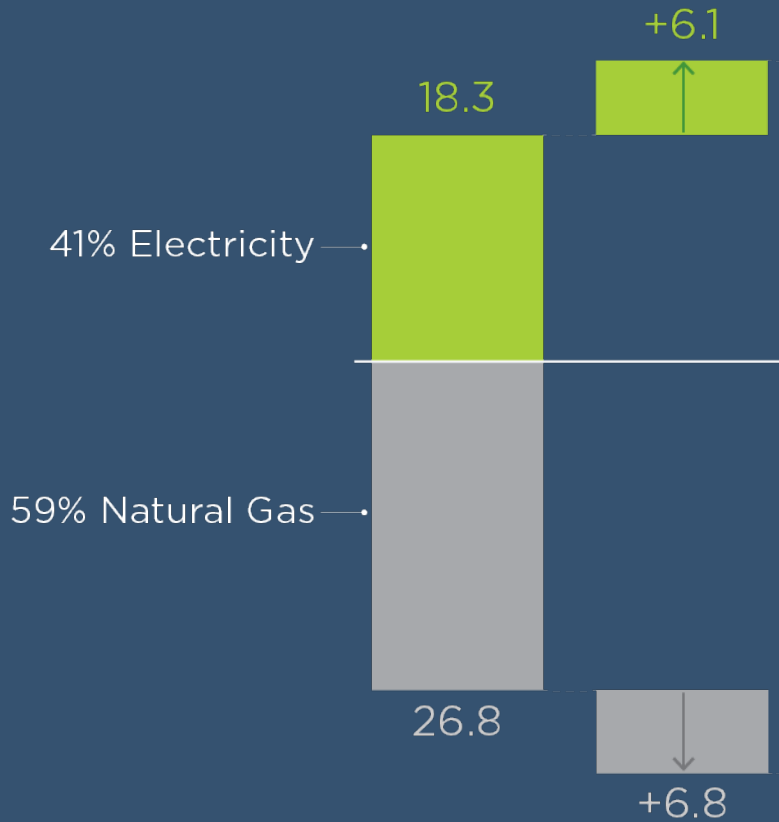


TOTAL  
ENERGY USE  
*in million GJ*

58.0

RENEWABLE

43%



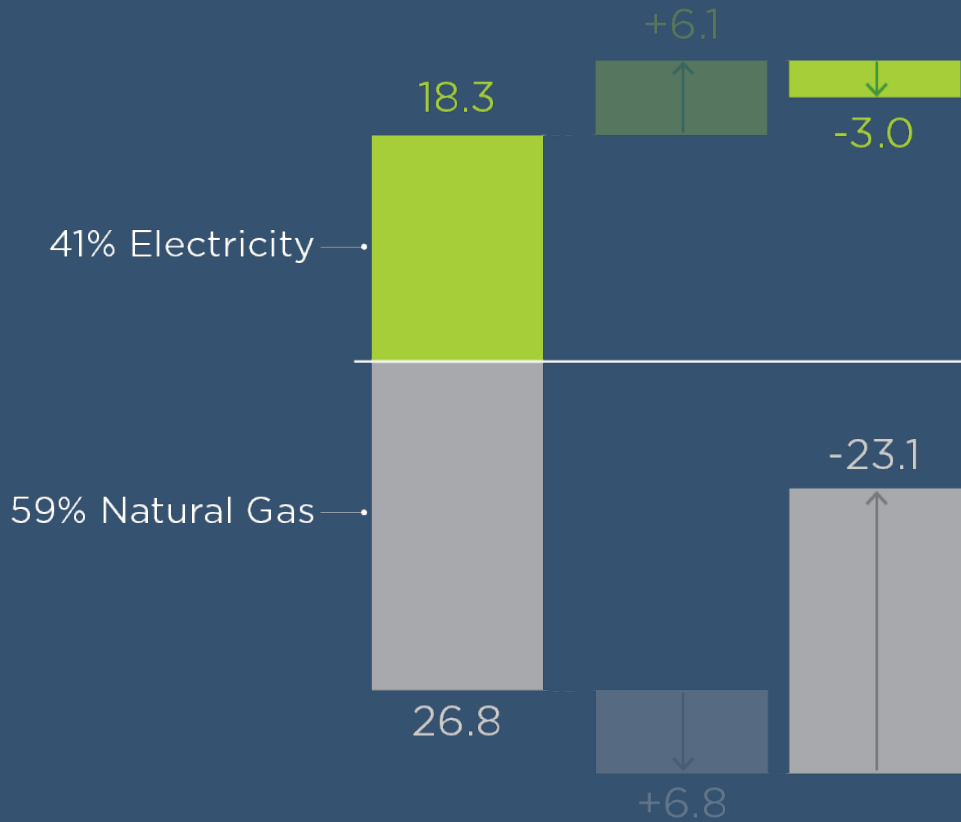
**BUSINESS-AS-USUAL  
GROWTH TO 2050**

TOTAL  
ENERGY USE  
*in million GJ*

31.8

RENEWABLE

69%



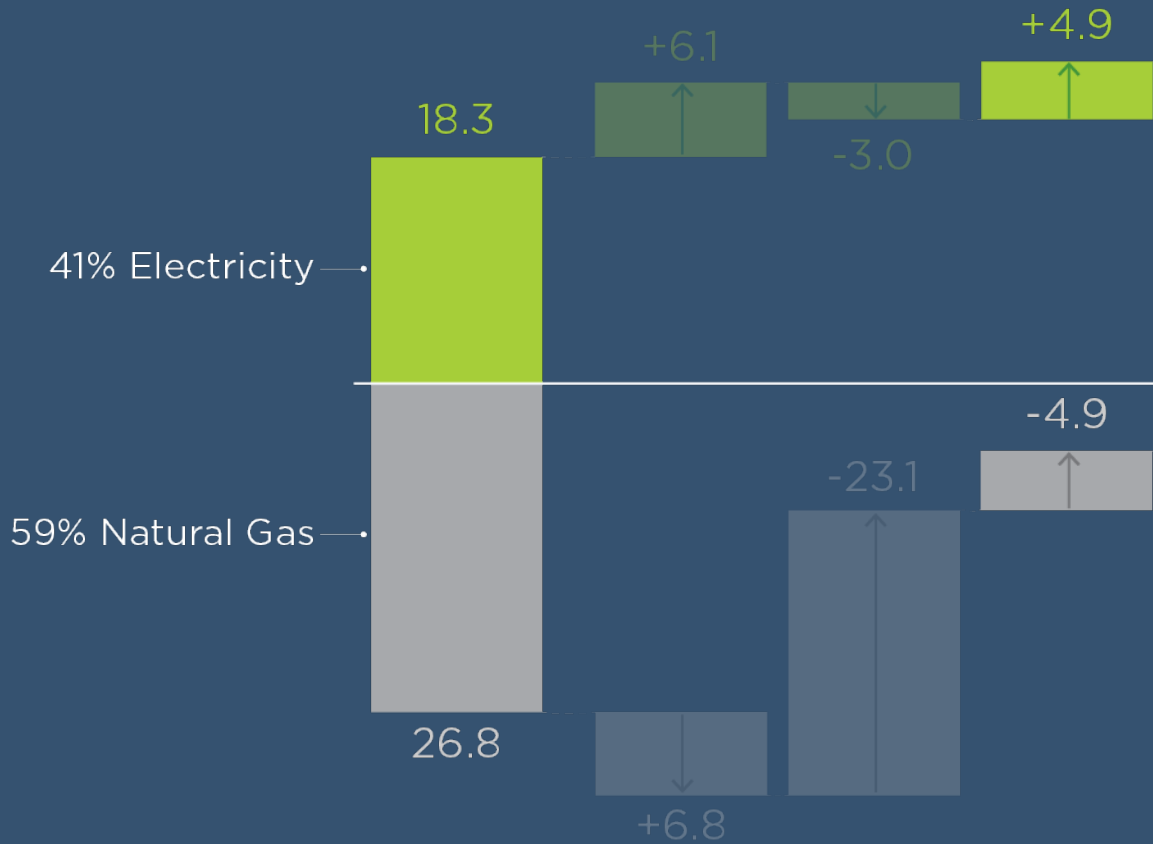
## 1. DECREASE ENERGY DEMAND

TOTAL  
ENERGY USE  
*in million GJ*

RENEWABLE

31.8

85%



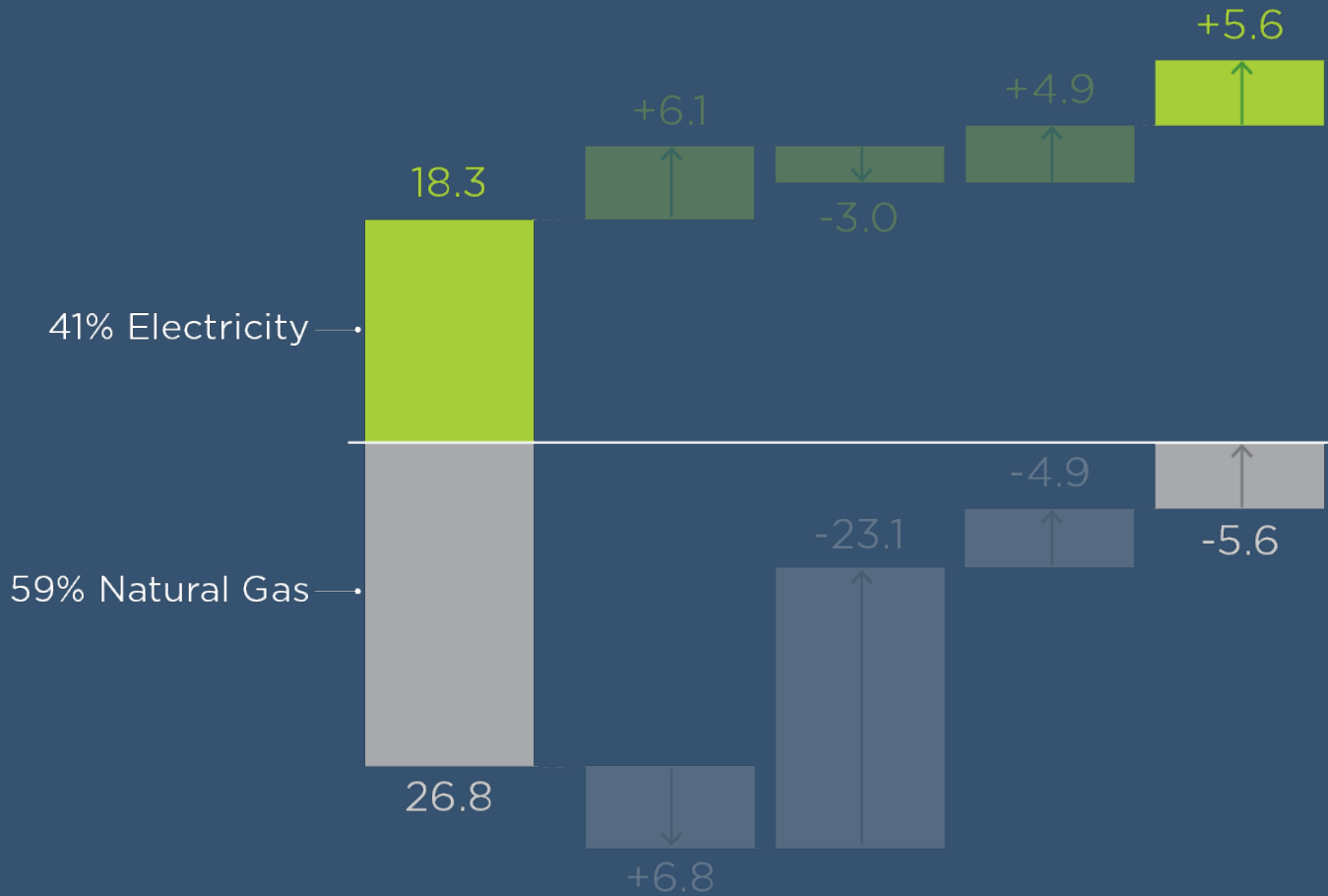
## 2. INCREASE USE OF RENEWABLE ENERGY

TOTAL ENERGY USE  
*in million GJ*

RENEWABLE

31.8

100%



### 3. INCREASE SUPPLY OF RENEWABLE ENERGY

TOTAL ENERGY USE  
*in million GJ*

2014

45.1

RENEWABLE

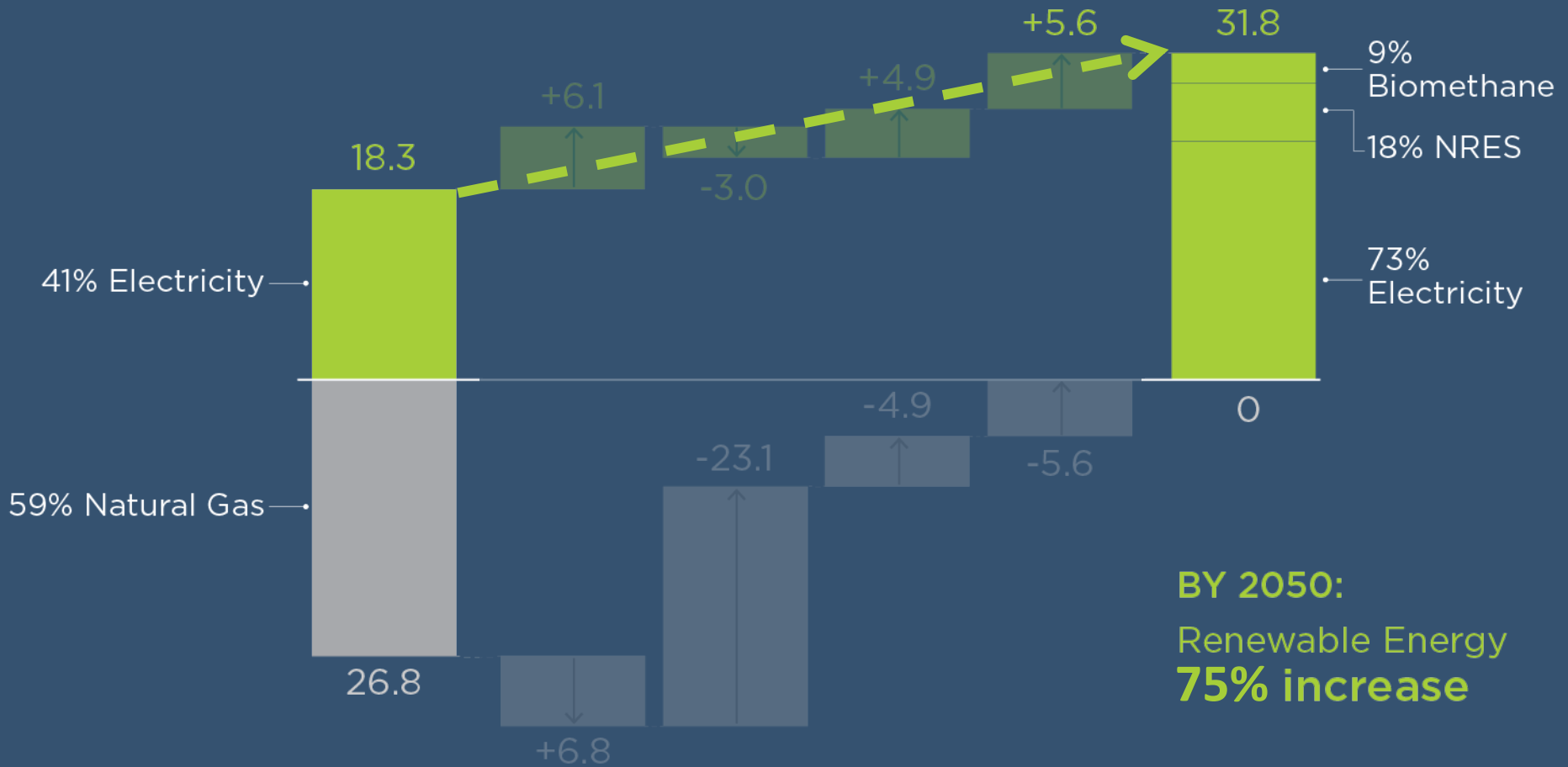
41%

# BUILDINGS

2050

31.8

100%



**BY 2050:**  
Renewable Energy  
**75% increase**

TOTAL ENERGY USE  
*in million GJ*

2014

45.1

RENEWABLE

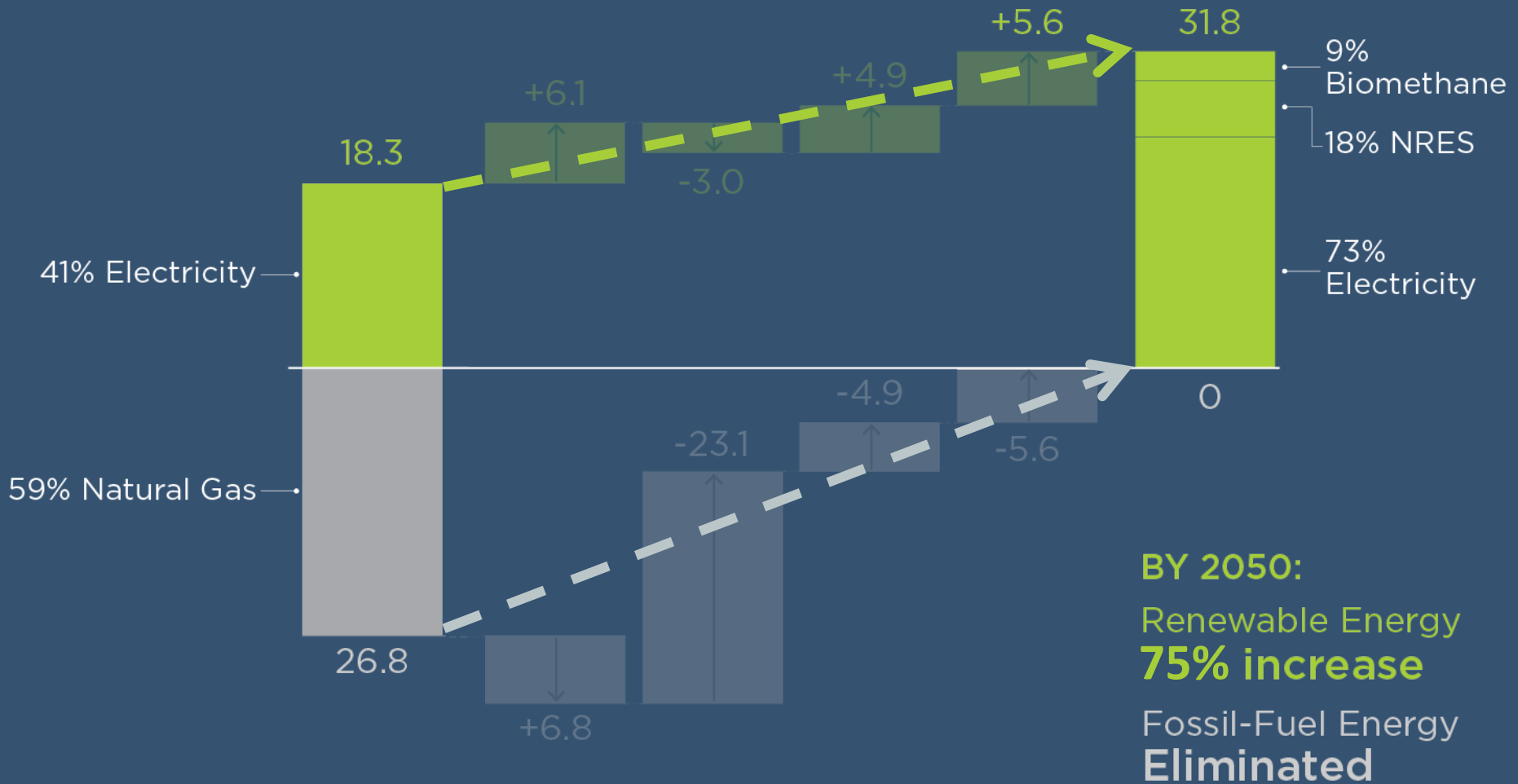
41%

# BUILDINGS

2050

31.8

100%

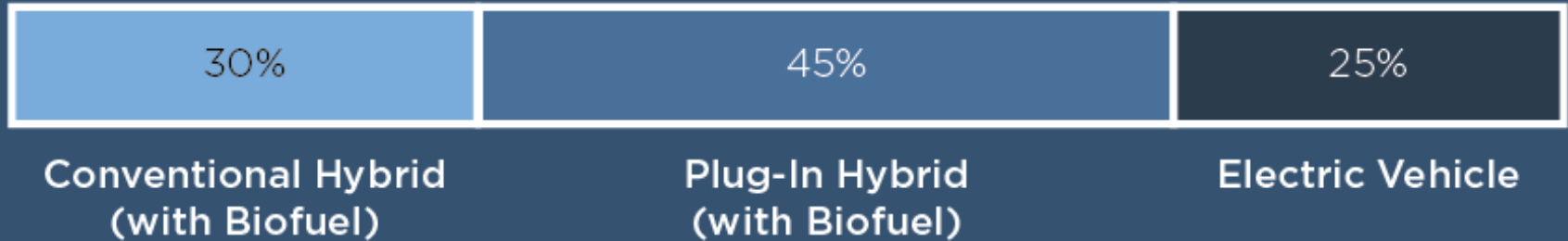


The background of the slide features a blurred image of an electric vehicle charging station on the right and a red car on the left. The charging station is a ChargePoint model, with 'EV ONLY' and 'chargepoint+' visible on its structure. The text is overlaid on a semi-transparent dark blue rectangle.

**REDUCED VEHICLE USAGE**  
THROUGH **ACTIVE TRANSPORTATION**

**RENEWABLY POWERED  
TRANSPORTATION**  
THROUGH **ELECTRIC VEHICLES,  
SUSTAINABLE-BIOFUEL HYBRIDS, AND  
OTHER RENEWABLE FUELS**

# PASSENGER VEHICLE FUEL TYPES BY 2050



## REDUCE ENERGY USE

- » Active transportation
- » Transit

## INCREASE USE AND SUPPLY OF RENEWABLE ENERGY

- » Electric vehicles
- » Biofuel-powered vehicles
- » Car-sharing

## PASSENGER VEHICLES



# COMMERCIAL TRANSPORT

Small in number  
but energy  
intensive

Projected future  
technologies »  
Sustainable  
biofuels,  
biomethane,  
hydrogen,  
electricity



## T.1

Use land-use & zoning policies to develop complete compact communities and complete streets that encourage active transportation and transit





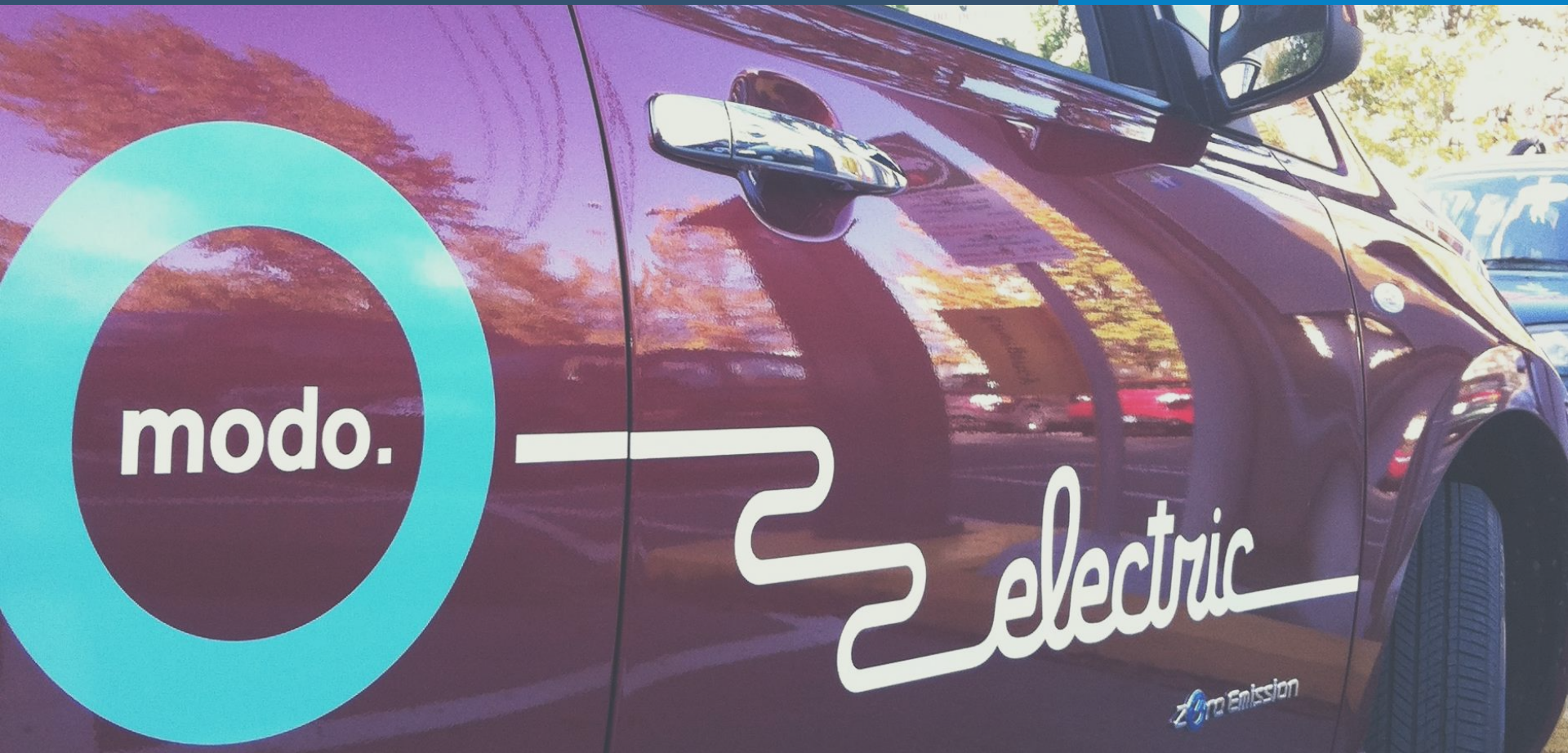
**T.2** Improve transit services as set out in *Transportation 2040*



## T.3

Transition light-duty vehicles (cars & light trucks) to be predominantly electric, plug-in electric or sustainable biofuel powered





**T.4**

Develop car-sharing and regional mobility pricing to encourage rational journey choice



## T.5

Better manage commercial vehicle journeys and transition heavy-duty (commercial) vehicles to sustainable biofuels, biomethane, hydrogen and electricity

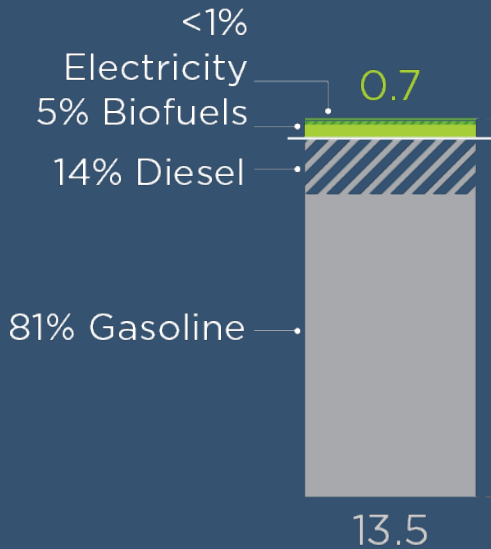
TOTAL  
ENERGY USE  
*in million GJ*

2014

14.2

RENEWABLE

5%



Legend

Heavy Duty

Light Duty

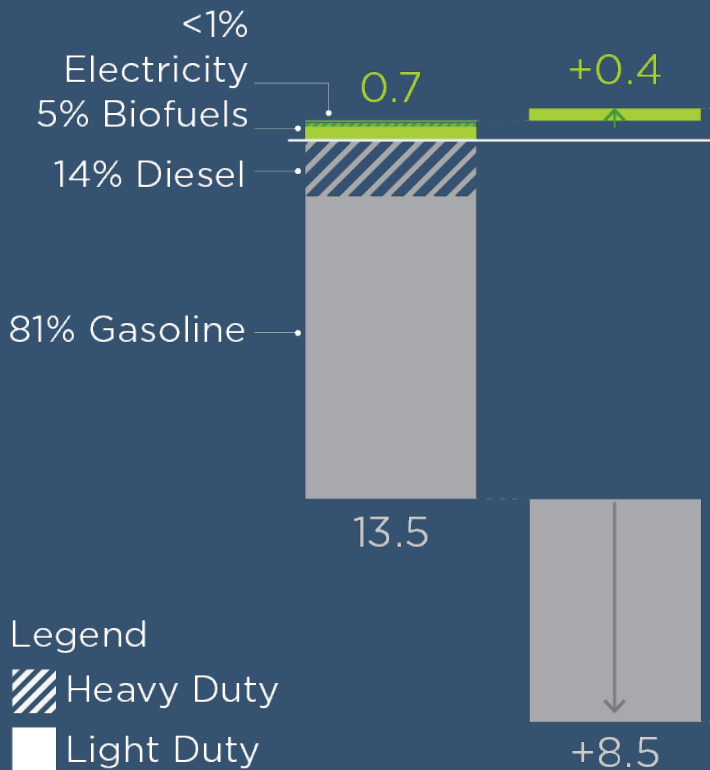
## TRANSPORTATION ENERGY USE IN VANCOUVER IN 2014

TOTAL ENERGY USE  
*in million GJ*

23.1

RENEWABLE

5%



**BUSINESS-AS-USUAL  
GROWTH TO 2050**

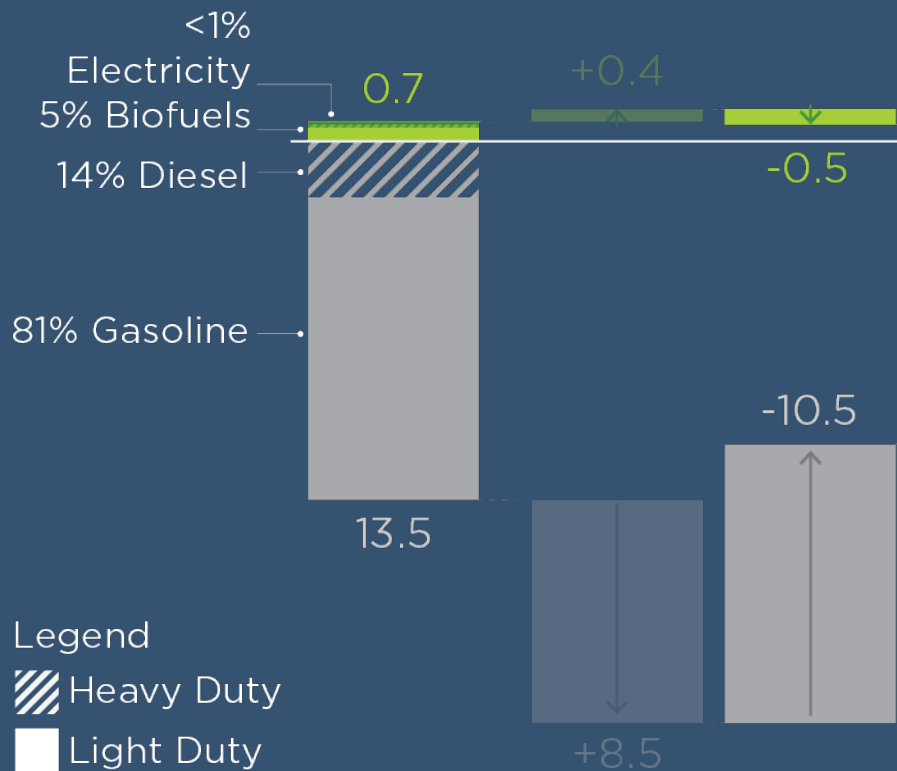


TOTAL  
ENERGY USE  
*in million GJ*

12.1

RENEWABLE

5%



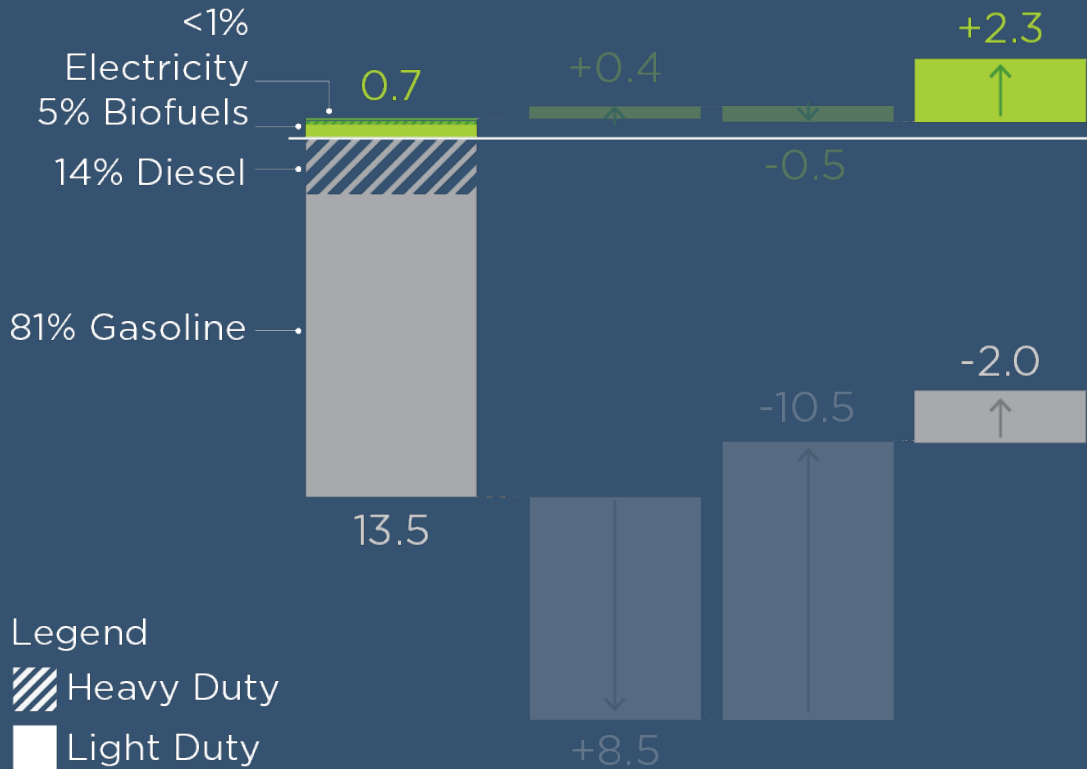
## 1. DECREASE ENERGY DEMAND

TOTAL ENERGY USE  
*in million GJ*

12.4

RENEWABLE

23%



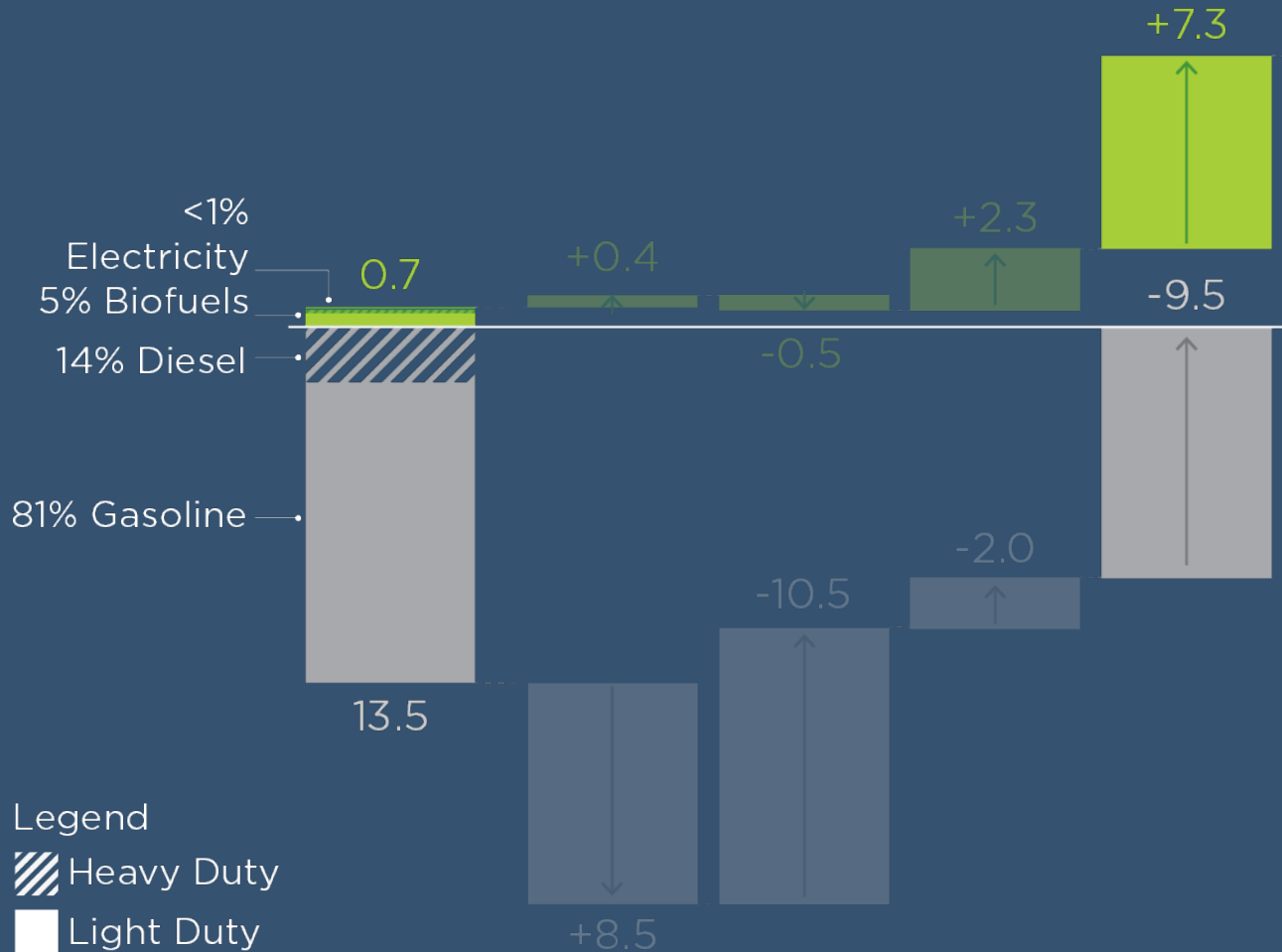
## 2. INCREASE USE OF RENEWABLE ENERGY

TOTAL ENERGY USE  
in million GJ

RENEWABLE

10.1

100%



**3. INCREASE SUPPLY OF RENEWABLE ENERGY**

Legend

Heavy Duty

Light Duty

**TOTAL ENERGY USE**  
*in million GJ*

2014

**14.2**

# TRANSPORTATION

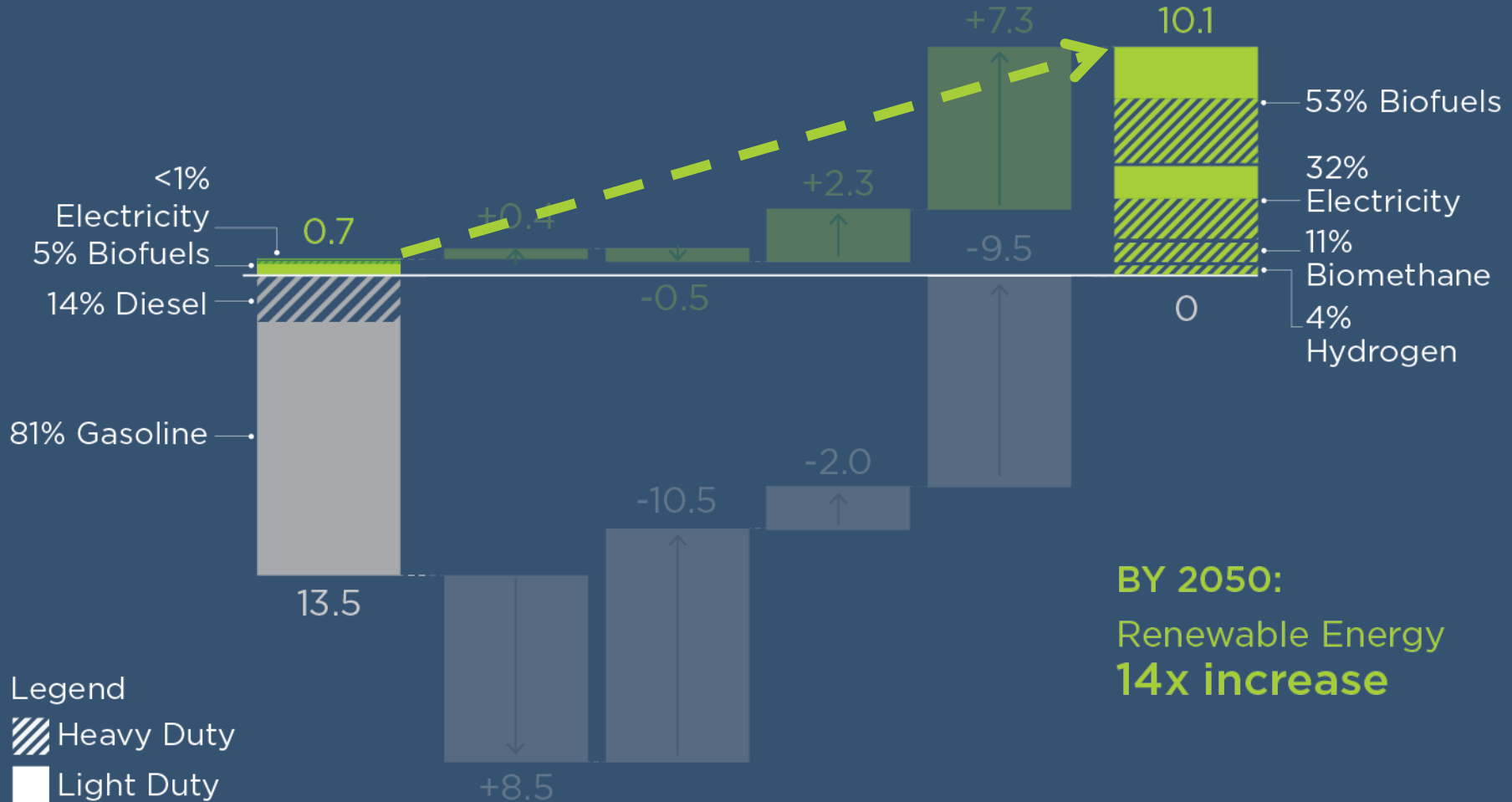
2050

**10.1**

**RENEWABLE**

**5%**

**100%**



**TOTAL ENERGY USE**  
*in million GJ*

2014

**14.2**

# TRANSPORTATION

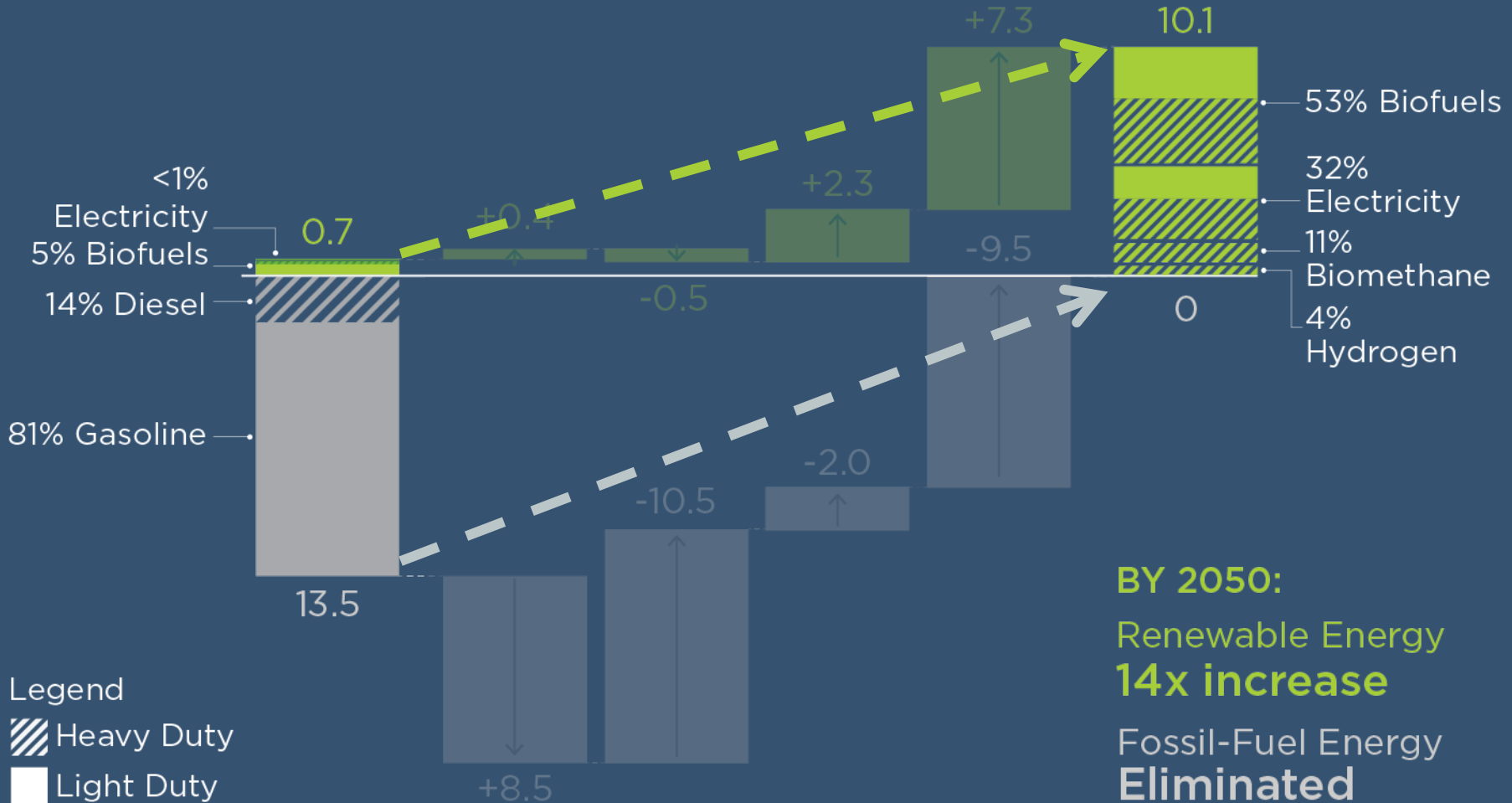
2050

**10.1**

**RENEWABLE**

**5%**

**100%**



**BY 2050:**  
Renewable Energy  
**14x increase**  
Fossil-Fuel Energy  
**Eliminated**



## WASTE AND BIOMETHANE

Food scraps and yard trimmings »  
Biomethane

Wastewater »  
Heat recovery  
Biomethane



# THE CITY AS A CATALYST

Municipal operations »  
Integrated planning;  
carbon pricing

Community support »  
Enabling tools;  
financing mechanisms

TOTAL ENERGY USE  
*in million GJ*

2014

**59.3**

# VANCOUVER OVERALL

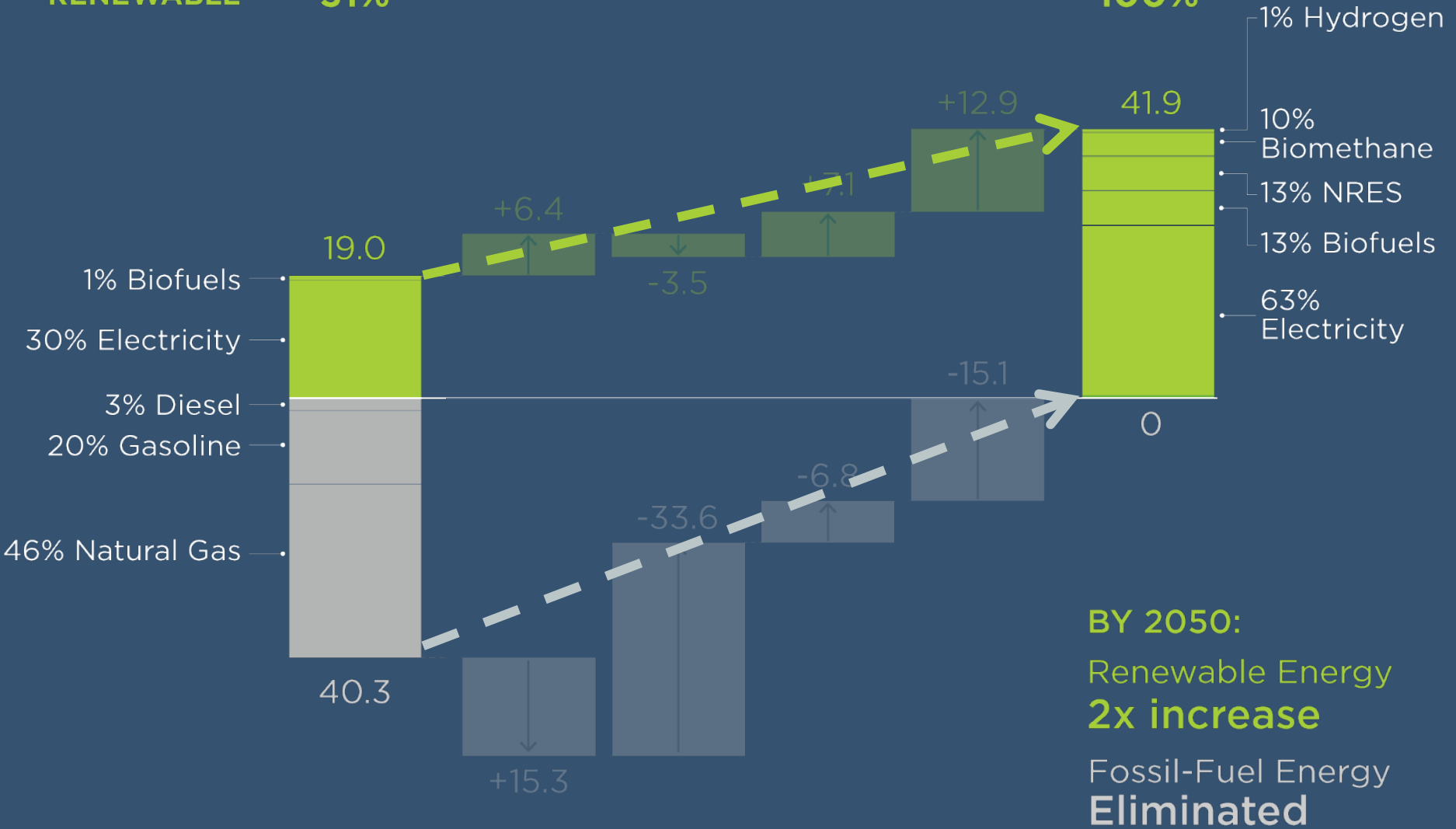
2050

**41.9**

RENEWABLE

**31%**

**100%**



**BY 2050:**  
Renewable Energy  
**2x increase**  
Fossil-Fuel Energy  
**Eliminated**



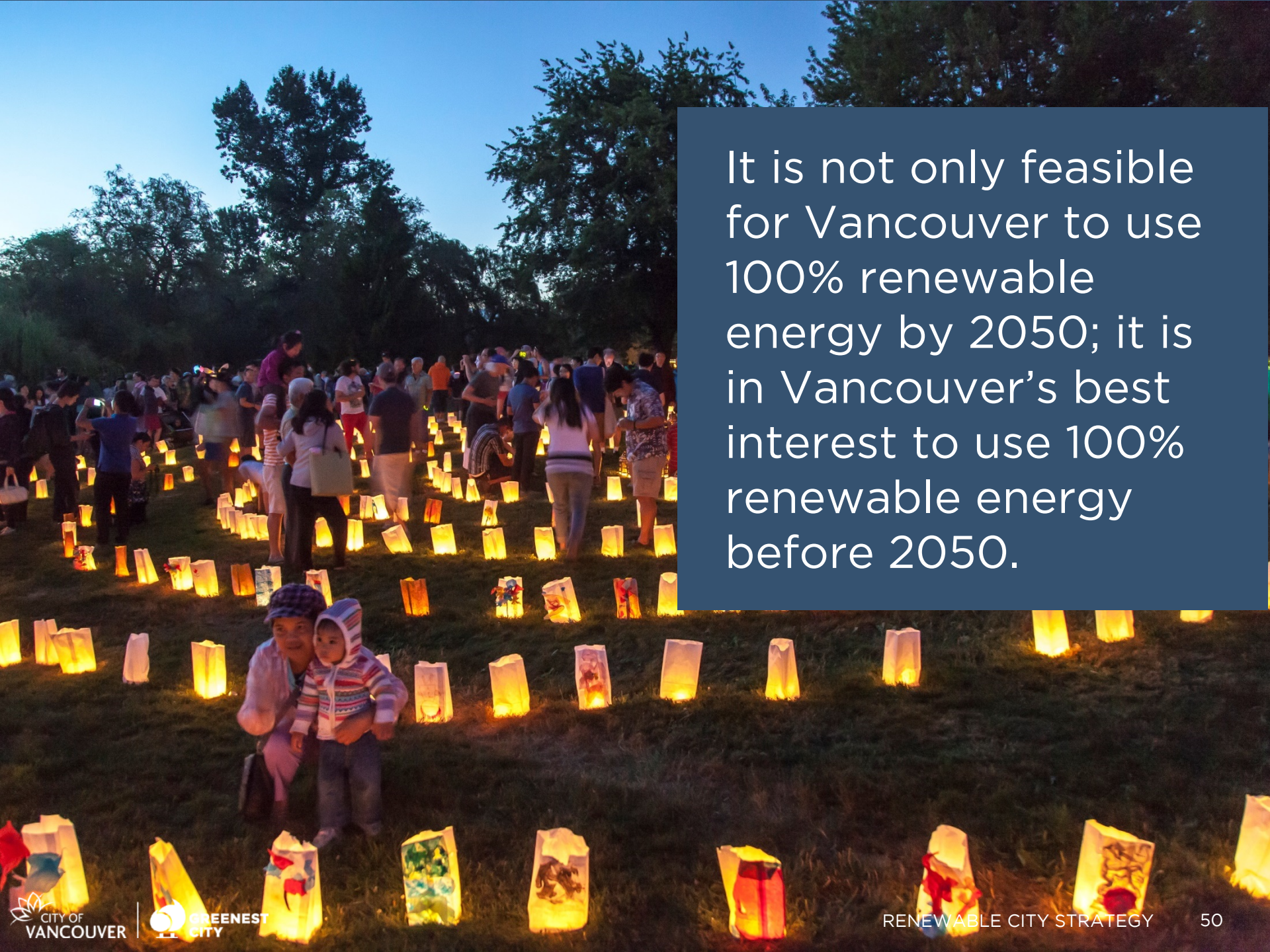


## NEXT STEPS

Implementation strategy

Measurement and reporting requirements

Interim targets



It is not only feasible for Vancouver to use 100% renewable energy by 2050; it is in Vancouver's best interest to use 100% renewable energy before 2050.