

PROJECT:

# CITY OF SHORELINE

DISTRICT ENERGY OVERVIEW AND FEASIBILITY STUDY

LOCATION: SHORELINE, WA

DATE: JULY 24, 2017





SOUTH FALSE CREEK Vancouver, BC



DOCKSIDE GREEN Victoria, BC



THE BREWERY BLOCKS Portland, OR



THE ROUND Beaverton, OR



REGENT PARK Toronto, ON



Hartford Central School District Hartford, NY



#### COMMUNITY

- 1. INCREASED ENERGY EFFICIENCY
- 2. REDUCED GHG EMISSIONS
- 3. REDUCED COST OF ENERY SERVICE
- 4. IMPROVED RESILIENCY AND RISK MITIGATION
- 5. PARTNERSHIP AND INVESTMENT OPPORTUNITY

#### BUILDING

- 1. REDUCED ENERGY COSTS AND COST STABILITY
- 2. INCREASED COST EFFECTIVENESS
- 3. ENHANCED ENERGY EFFICIENCY AND GREENER ENERGY
- 4. REDUCED BUILDING O&M RESPONSIBILITY AND COST
- 5. FUTURE TECHNOLOGY BENEFITS

#### DETERMINING THE POTENTIAL VALUE OF DISTRICT ENERGY

- 1. SCALE The ultimate scale of the system.
- 2. DENSITY AND LOAD MIX The density and mix of loads (the higher density and greater use mix will typically results in greater ratio of benefits to costs).
- 3. DEVELOPMENT RATE AND PHASING Adequate development demand to justify capital investments.
- 4. LOAD SECURITY Ensuring load certainty through agreements, requirements and/or incentives for customers to connect and consume.

# POTENTIAL SHORELINE DE



## POTENTIAL SHORELINE DE



#### SYSTEM BOUNDARY

 Likely district energy system boundary.

#### **CENTRAL PLANT**

- Central generation of heating
- (boilers) and cooling (chillers)
- Boilers to be natural gas fired.
- Chillers to be electric.
- Footprint likely 10,000-20,000 SF (to confirm...).
- Central plant can be integrated into open space or buildings.

#### DISTRIBUTION SYSTEM

- Traditional four pipe system.
- 2 pipes for heating (supply and return)
- 2 pipes for cooling (supply and return)



CENTRAL PLANT INTEGRATED INTO URBAN FABRIC The Brewery Blocks (Portland, OR)

NOTE: Concepts are for illustrative purposes only. Further assessment of DE feasibility recommended.

#### $185^{TH}$ ST. STATION – DEVELOPMENT





185th Street Station Subarea Planned Action FINAL ENVIRONMENTAL IMPACT STATEMENT

DECEMBER 2014

#### Table 3.2-13 Estimated Twenty-Year and Build-Out Population, Households, and Employment Projections

	Alternative 4—	Research Statements	<ul> <li>Manufacture (1)</li> </ul>	A REAL PROPERTY AND A REAL	the second s
	Preferred	10	Report of the second	State County	10.000
	Alternative	and the second second			
2035 Population*	10,860 to 13,343	10,860 to 13,340	10,860 to 13,940	10,000 to 11,000	1,754
2035 Households*	4,450 to 5,500	6.00163.000	4,001163,000	4/08/16/3/08	3,608
2035 Employees*	1,950 to 2,370	1.899-0-1.009	1,001+0-1,029	1,990 to 2,370	1,796
Build-Out Population	56,529	46,759	1045	17,510	
Build-Out Households	23,554	17,000	15.548	2,296	
Build-Out Employees	15,340	56,237	31,050	9,750	11
Build-Out Years	80 to 125 years by		The Revenue of	Real Report in	
	2095 to 2140		AND A DOUB	and the second	

Projections assume 1.5 percent to 2.5 percent annual growth rate for the action alternatives from the time the rezoning is adopted

SHORELINE

## $185^{TH}$ ST. STATION – DEVELOPMENT







#### PUTTMAN INFRASTRUCTURE, INC.

### $185^{TH}$ ST. STATION – DEVELOPMENT



■Existing ■New

NOTE: DEVELOPMENT HORIZON VERY LONG FOR A DISTRICT ENERGY FEASIBILITY AND IMPLEMENTATION PLAN

#### ACHIEVING SHORELINE CLIMATE ACTION

SCOPE SHIFT: IDENTIFY HOW BEST TO ACHIEVE SHORELINE CLIMATE ACTION PLAN GOALS FOR THE 185<sup>TH</sup> ST. STATION AND WHAT THE ROLE OF DISTRICT ENERGY WOULD.

> SHORELINE CLIMATE ACTION PLAN GOALS (KING COUNTY):

Greenhouse gas emissions reduction targets:

- 25% Reduction by 2020
- 50% Reduction by 2030
- 80% Reduction by 2050



SHORTLINE		Attachment B	New Energy Cities	Energy Cities	1	
		MEMO				
DATE:	August 2015					
TO:	Shoreline City Council					
FROM:	Rika Cecil, Environment Miranda Redinger, Seni	al Programs Coordinator		sions in		
	Elizabeth Willmott Clim	or Planner ate Solutions' New Energy Citie	is Program			
RE:	Carbon Wedge Analysis	Strategies to Implement the C	limate Action Plan			
					Cities	
Overview This memo n	rouidos ao undato rogardi	ng the City of Shareline's proce	es of screening and		osts	
prioritizing co	ommunity greenhouse gas	(GHG) reduction strategies to :	achieve the City's goal of			
50% GHG red	duction below its 2007 lev	el by 2030 (50x30). Based on th	is process, City of		and	
Shoreline sta	ff recommends that the S	horeline City Council take the fo	ollowing actions:	wilding	uno	
1. Sched	dule a Council workshop to	select strategies from this scre	eening process;	unung	he	lities
2. Direct	t staff time and allocate re	sources to implement the high	est-priority strategies; and			
<ol><li>Advoc</li></ol>	cate at the regional and st	ate levels for the highest-priorit	ty policies and programs			uce
relate	d to community carbon re	duction, including but not limit	ted to the King County-			
Cities	climate Collaboration (K4	c) Joint City-County Climate Co	mmitments.			
The proposal	is included in this memo a	re at a conceptual stage, and th	eir full implementation	the State of	, or	85
will depend o	on Council direction and re	source allocation.		31 to be		
Table of Cont	tents			e a stretch		
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I. Backg	tround (page 3)			essively		
II. Strate	egies (page 4)			ut the goal	¥ will	
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8.	Transportation (page 6)	'S				
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#### 185<sup>th</sup> ST. STATION – ENERGY DEMAND



#### 185<sup>th</sup> ST. STATION – ENERGY DEMAND



#### 185<sup>th</sup> ST. STATION – GHG





#### POLICY DECISION - GAS VS. NO GAS

#### ACHIEVING THE SHORELINE CLIMATE ACTION PLAN GOALS AT $185^{TH}$ ST. STATION

# ONE GOAL

**FIVE ACTIONS** 

THIRTY YEARS

### ACHIEVING CLIMATE ACTION PLAN

#### **FIVE KEY ACTIONS:**

- 1. NO USE OF COMBUSTION OR NATURAL GAS HEATING IN NEW BUILDINGS
- 2. INCREASED ENERGY EFFICIENCY IN NEW BUILDINGS
- 3. RETROFIT EXISTING BUILDINGS FOR GREATER ENERGY EFFICIENCY AND FUEL-SWITCH FROM COMBUSTION HEATING
- 4. UTILIZE ONSITE RENEWABLE ENERGY
- 5. DEVELOP DISTRICT ENERGY AND COMBINED HEAT AND POWER SYSTEMS

## ACHIEVING CLIMATE ACTION PLAN



## THE FIVE ACTIONS – RECOMMENDATIONS &

- 1. NO USE OF COMBUSTION OR NATURAL GAS HEATING IN NEW BUILDINGS
  - Potential policy decision for City Council.
- 2. INCREASED ENERGY EFFICIENCY IN NEW BUILDINGS
  - Continue to require Built Green 4 Star for all new buildings.
  - No natural gas use.
  - Implement Net-Zero Demonstration Pilot
- 3. RETROFIT EXISTING BUILDINGS FOR GREATER ENERGY EFFICIENCY AND FUEL-SWITCH FROM COMBUSTION HEATING
  - Establish existing building energy efficiency retrofit program.
  - Also, consider converting existing buildings to reduce natural gas use.
- 4. UTILIZE ONSITE RENEWABLE ENERGY
  - Prepare program to achieve 1.25MW onsite renewable energy target (solar PV).
- 5. DEVELOP DISTRICT ENERGY AND COMBINED HEAT AND POWER SYSTEMS
  - As Node 2 of the 185<sup>th</sup> St. Station moves closer to development, prepare district energy feasibility assessment and begin to execute implementation.