



Itinerary

Origin – rationale for action



Journey – the planning process



Destination – preferred path



Origin



BC Climate Policy Context

- BC GHG Reduction Target
 - 33% below 2007 levels by 2020; 80% by 2050
- Climate Action Charter
 - Carbon Neutral Local Gov
 - Community Inventory
 - Complete, compact, energy efficient
- Green Communities Act
 - *GHG targets, policies and actions in OCPs*



Vulnerability Climate Science



- Climate Science
 - emissions must peak before 2015, with 50-85% reductions by 2050 (IPCC FAR)
- Infrastructure threat
 - Direct losses from global natural catastrophes increased 14X 1950-1990 (Munich Re, 06)
 - Infrastructure damage from natural catastrophes doubling every 5-10 yrs (Insurance Bureau of Canada)
 - BC Disaster Financial Assistance (NRCan, 07)
 - 1990-2002 = \$10 million/yr
 - 2003-2005 = \$43 million/yr

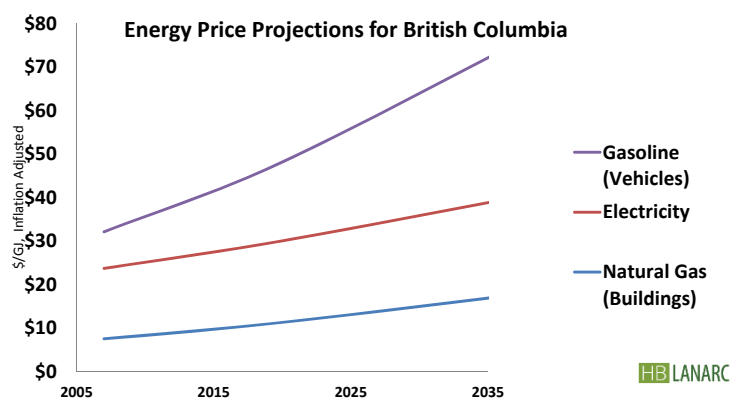


BC Energy Policy Context

- BC Building Code
 - Some of higher standards in N America
 - Potentially 43% more efficient by 2020
 - Potentially Net Zero by 2030
- BC Hydro
 - Meet 66% of new power by 2020 through conservation
 - Sustainable Communities Group



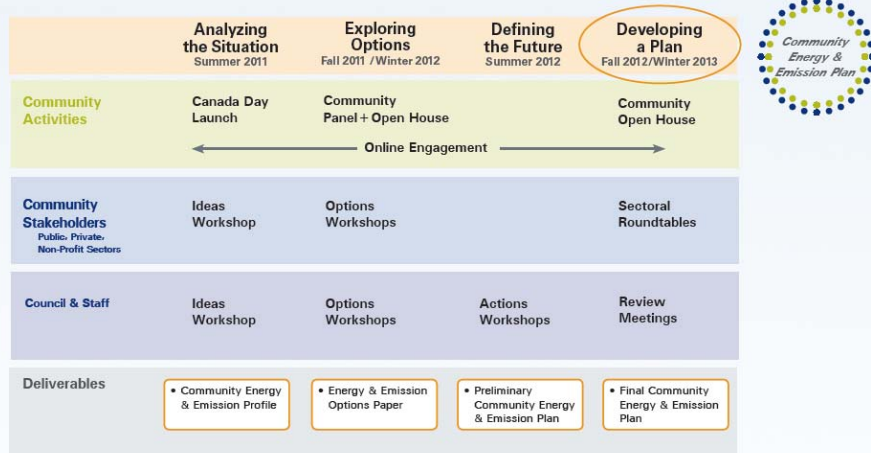
Vulnerability Energy Security



Estimate based on best available data: BC Hydro, USEIA (2010)
Composite prices: residential and commercial
Taxes and delivery charge estimates included



Surrey Community ENERGYShift Planning Timeline





JOURNEY: SITUATIONAL ANALYSIS

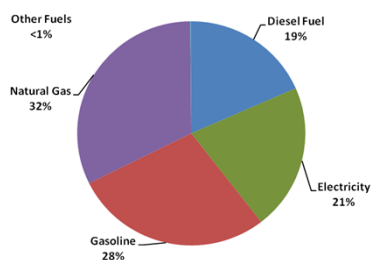


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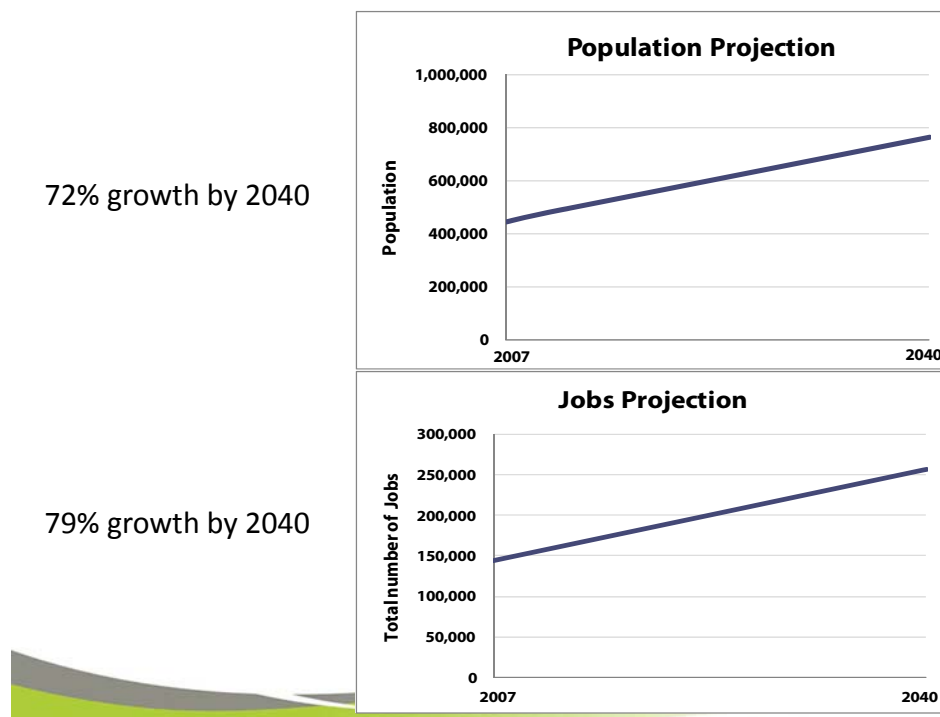
Energy Use by Sector and Sub-Sector Emissions by Sector and Sub-Sector



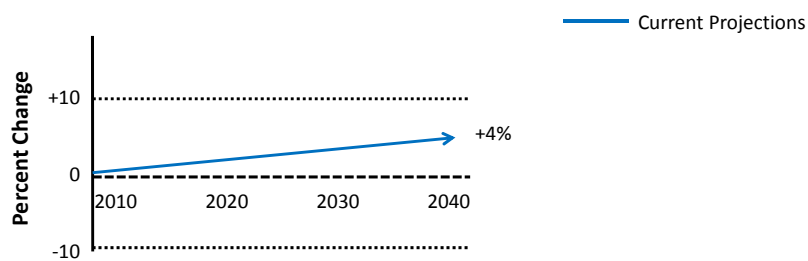
Community Energy Use by Fuel Type in 2007



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Total Community GHG Analysis



Energy Spending Analysis

	2007	2020
Residential buildings	\$ 251 million	\$ 627 million
ICI Buildings	\$ 118 million	\$ 238 million
Personal		
Transportation	\$ 402 million	\$ 718 million
Public Transportation	\$ 43 million	\$ 89 million
Commercial Trans.	\$ 217 million	\$ 351 million
Total All	\$ 1,031 million	\$ 2,022 million

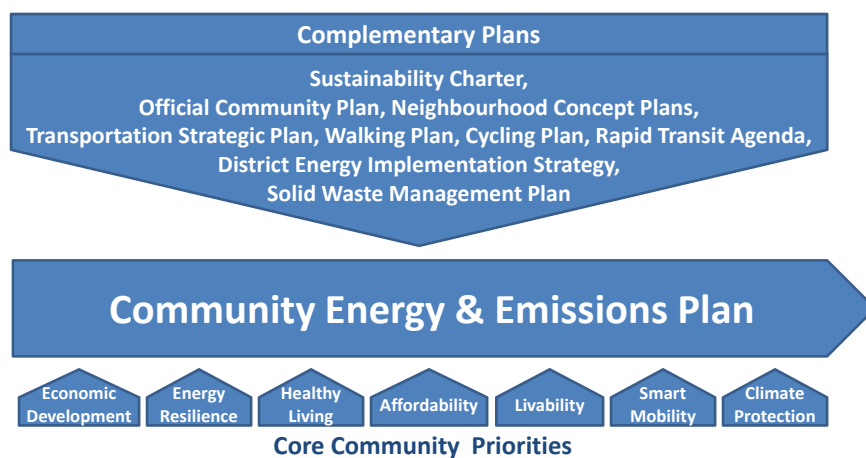


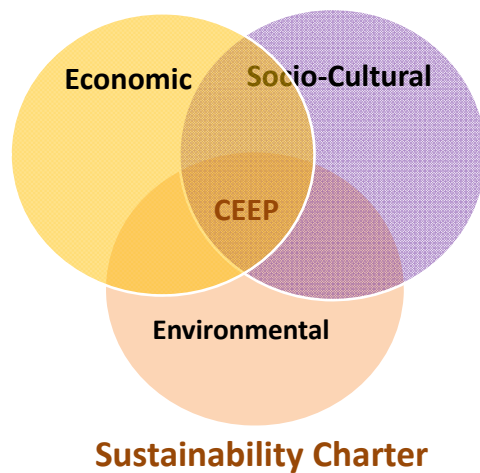
JOURNEY: OPTIONS DEVELOPMENT





Strategic Policy Context



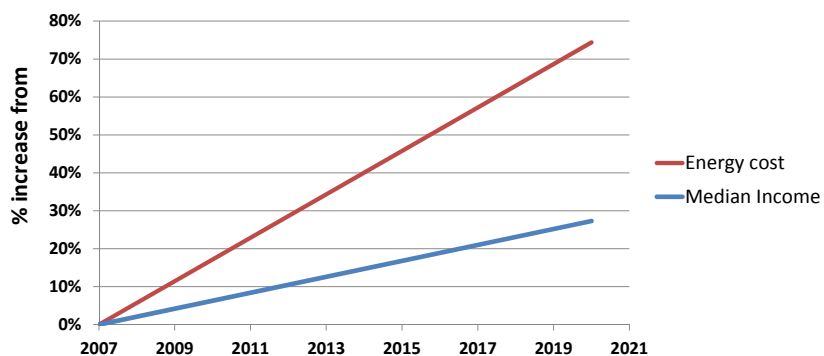


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Emerging Energy Vulnerability

Projected % Increase in Energy Spending & Family Income in Surrey



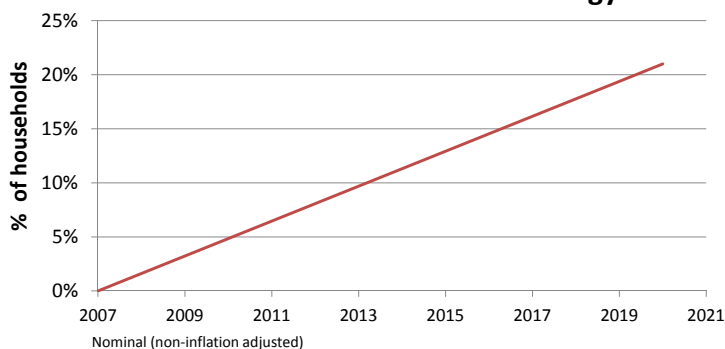
Nominal (non-inflation adjusted)

Median incomes are only staying pace with inflation



Emerging Energy Vulnerability

Share of Surrey Households Spending More than 10% of Total Income on Energy



	2007	By 2020	change
Average Energy Spending per Household	\$ 4,300	\$ 6,000	+40%
Avg Share of Existing HH Spending >=10%	0.2%	21%	+19.9%

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Working Vision

*Surrey will advance sustainable energy and low carbon solutions that support the long-term **health, affordability, prosperity, and mobility** of residents, businesses and institutions.*

*Where we **live and work** and how we move around will **become increasingly efficient**. How we use and **dispose of resources** will **become increasingly smart**. We will support **energy supply systems that are more resilient** to changing energy supplies and prices.*

***We will work with** residents, and public, private, academic and social sector organizations **to advance innovative and pragmatic opportunities**.*

*Our efforts will improve **community liveability** and **regional air quality** while making an important **contribution to global climate protection**.*

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Community Energy + Emission Context

- Deep per capita and community-wide energy and emission reductions are challenging beyond metropolitan cores
- Municipalities beyond the urban core are the most important communities for action
- Strategies have been developed that begin to bend Surrey's energy and emission trajectory



Population Growth + Carbon: Future Scenarios

Base Yr Population: 500,000

200,000 @ 7 t/c/yr

200,000 @ 6 t/c/yr

100,000 @ 5 t/c/yr

Per Capita Per Yr: 6.2 t

Total GHG Per Yr: 3.1 Mt



Future Population: 700,000 (+40%)

Focussed Growth Future

200,000 @ 3 t/c/yr

250,000 @ 4 t/c/yr

150,000 @ 5 t/c/yr

100,000 @ 6 t/c/yr

Per Capita: 3.6 t (-41%)

Total GHG: 2.6 Mt (-18%)

Distributed Growth Future

100,000 @ 3 t/c/yr

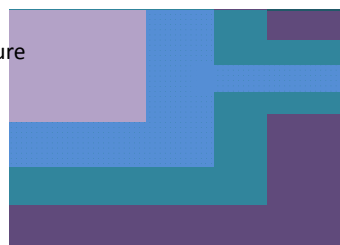
150,000 @ 4 t/c/yr

200,000 @ 5 t/c/yr

250,000 @ 6 t/c/yr

Per Capita: 4.9 t (-21%)

Total GHG: 3.4 Mt (+10%)

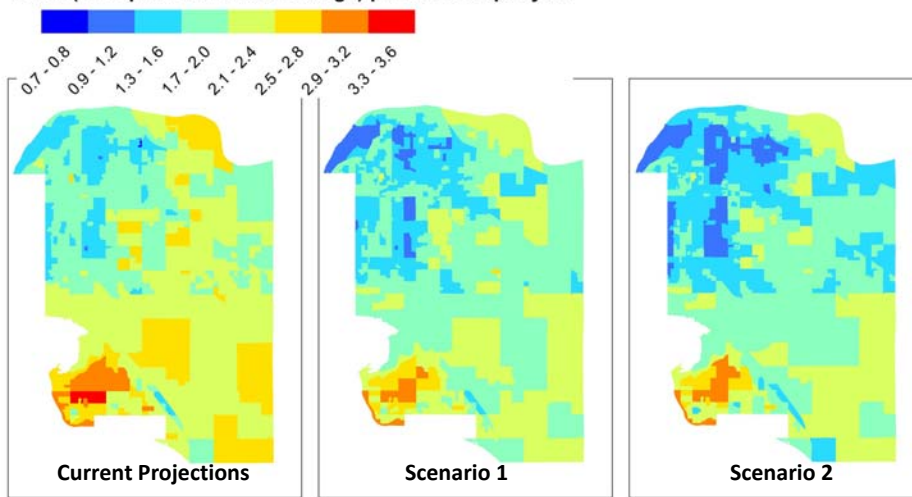


Community-Wide Scenario Summaries

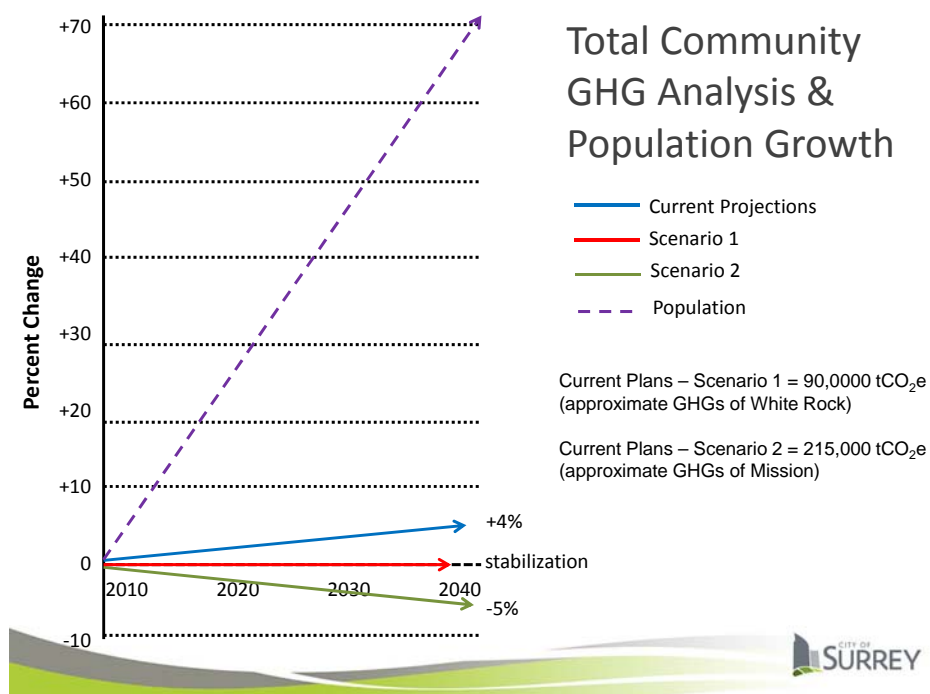
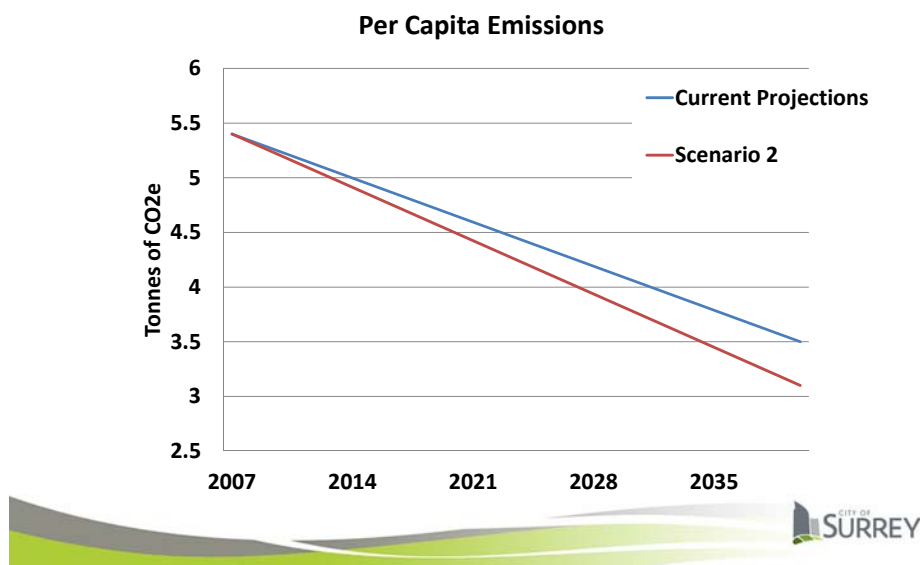
	Current Projections	Scenario 1	Scenario 2
Land Use	<ul style="list-style-type: none"> Significant growth focus in City Centre and greenfields 	<ul style="list-style-type: none"> Allocate growth across City Centre , town centres, corridors, distributed infill and greenfields 	<ul style="list-style-type: none"> Focus growth in City and town centres and corridors, and approved NCPs Multi family emphasis
Transpo	<ul style="list-style-type: none"> More bus service Very modest active transpo infrastructure 	<ul style="list-style-type: none"> Modest BRT/LRT Modest active transpo infrastructure 	<ul style="list-style-type: none"> Significant BRT and LRT Significant active transpo infrastructure
Buildings + Energy Supply	<ul style="list-style-type: none"> Sr Gov: building code (efficiency) and some retrofits (incentives) 	<ul style="list-style-type: none"> Current Projections plus... Education, incentives and modest standards Modest DE 	<ul style="list-style-type: none"> CP + Scenario 1 plus Intensified education and incentives/financial tools and increased standards Significant DE
Waste	<ul style="list-style-type: none"> Increased Landfill Gas capture and waste to energy 	<ul style="list-style-type: none"> Current Projections plus... Increased reduction and diversion 	<ul style="list-style-type: none"> Current Projections plus... Significant increase in reduction and diversion

Community-Wide Per Capita GHG Analysis by Neighbourhood

Total Yearly Per Capita Residential Emissions
tCO₂ (transportation and buildings) per resident per year



Per Capita GHG Analysis



Community Wide Energy Spending Analysis

- 2007 commercial/residential spending: \$ 1,031 million
- Community wide energy spending doubles before 2020
 - Rising from \$ 1,031 million in 2007
- Growth driven largely by rising fuel prices (particularly gasoline and electricity) followed by population growth

Future Commercial/Residential Energy Spending & Savings		
	Energy Spending in 2020	Savings Relative to Current Projections
Current Projections	\$2,021 million	-
Scenario 1	\$1,998 million	\$23 million per yr
Scenario 2	\$1,956 million	\$65 million per yr



Community Wide High Level Indicator Scoring

	Current Projections	Scenario 1	Scenario 2
Carbon & Energy Performance	<div><div></div><div></div></div>	<div><div></div><div></div><div></div></div>	<div><div></div><div></div><div></div><div></div></div>
Ease of Implementation	<div><div></div><div></div><div></div><div></div><div></div></div>	<div><div></div><div></div><div></div><div></div><div></div></div>	<div><div></div><div></div><div></div><div></div><div></div></div>
Fundability	<div><div></div><div></div><div></div><div></div></div>	<div><div></div><div></div><div></div><div></div></div>	<div><div></div><div></div><div></div><div></div></div>
Energy Savings and Economic Dev		<div><div></div><div></div></div>	<div><div></div><div></div><div></div><div></div></div>
Walkability	<div><div></div><div></div></div>	<div><div></div><div></div><div></div></div>	<div><div></div><div></div><div></div><div></div></div>
Land Use Support iveness for Transit	<div><div></div><div></div></div>	<div><div></div><div></div><div></div></div>	<div><div></div><div></div><div></div><div></div></div>
District Energy Supportiveness		<div><div></div><div></div><div></div></div>	<div><div></div><div></div><div></div><div></div></div>
Zero Waste	<div><div></div></div>	<div><div></div><div></div><div></div></div>	<div><div></div><div></div><div></div><div></div></div>

Community-Wide Strategy Summaries

	Current Projections	Scenario 1	Scenario 2
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Council Recommendation & Current Staff Thinking



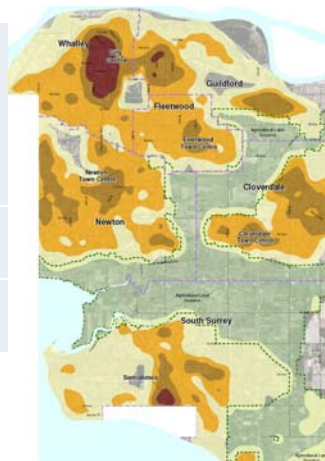
"DESTINATION" : PREFERRED PATH



Land Use Draft Strategies



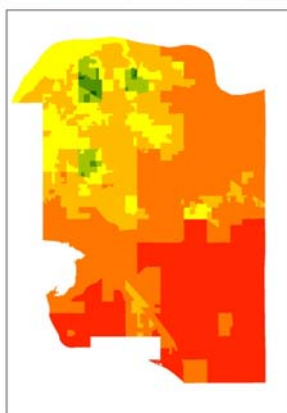
Residential Growth	<ul style="list-style-type: none"> • Continue focus on SCC & TCs • Strengthen corridors • Build out existing Neighbourhood Plans (NCPs) • Gentle infill of mature areas
Commercial Growth	<ul style="list-style-type: none"> • Distributed
Housing Typology	<ul style="list-style-type: none"> • Balance singly and multi family



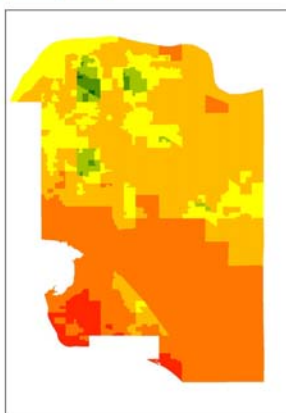
Community Walkability

Walkability Score

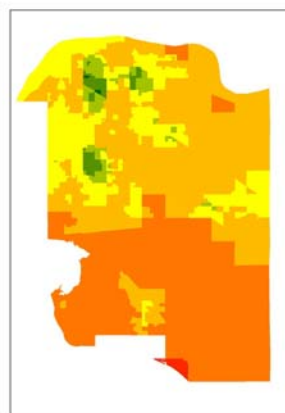
Least Walkable <--> More Walkable <--> Most Walkable



Current Projections




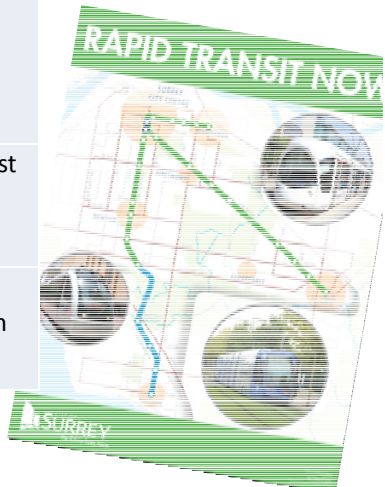
Scenario 1



Scenario 2

Transit + Roads Draft Strategies




Rapid Transit		
Bus Service	<ul style="list-style-type: none"> Significant increase on 2040 Fast Transit Network and modest shuttle 	
Roads	<ul style="list-style-type: none"> Balance road investment with infrastructure for transportation diversity 	



Cycling, Walking & TDM



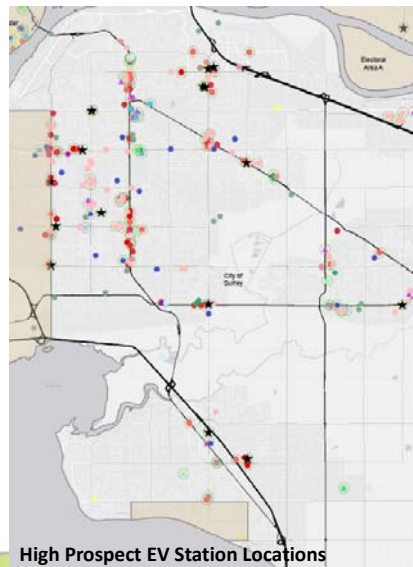
Active Transportation	<ul style="list-style-type: none"> Intensify street grid and connectivity Increase sidewalk coverage and quality Expand bike network, enhance route safety, and improve end of trip facilities 	
TDM	<ul style="list-style-type: none"> As transportation choice improves, reduce parking, incent car sharing 	



Green Cars Draft Strategies



Fleets	<ul style="list-style-type: none"> Private Sector Green Fleet Management
Car Sharing	<ul style="list-style-type: none"> Expand in new developments
Alternative Fuels	<ul style="list-style-type: none"> Service station bylaw
LEVs	<ul style="list-style-type: none"> Public & private sector Emphasis on EVs

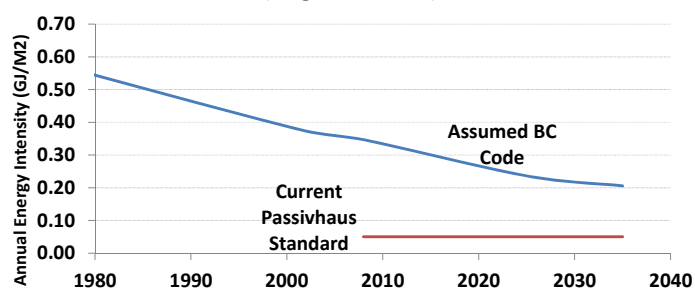


New Construction Draft Strategies



New Construction Efficiency & Renewables	<ul style="list-style-type: none"> Training, Education & Outreach Promote Utility Incentives Local Incentives Code Compliance Design Guidelines
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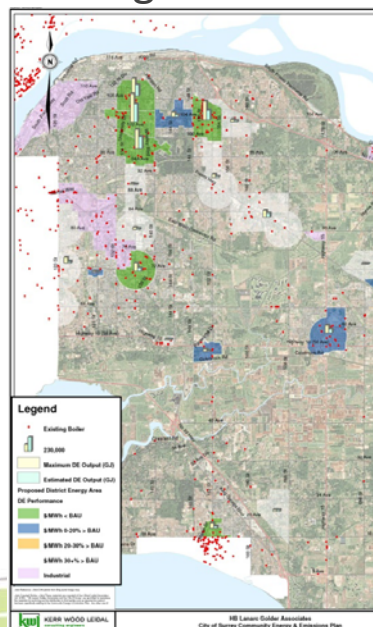
Heating Demand by Era of Construction
(Single Detached)



District Energy Draft Strategies

District Energy

- City led in City Centre and evaluate town centres
- Facilitate private sector

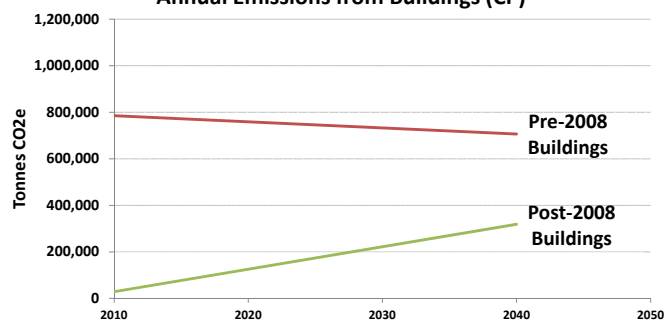


Building Retrofit Draft Strategies

Building Retrofits

- Promote 3rd Party Incentives
- Evaluate potential for rental multi-unit residential buildings

Annual Emissions from Buildings (CP)



LOCAL ATTRACTIONS

- **ENERGYShift Sectoral Roundtables**

Local Business
Mon, Jan 14, 9-12

New Construction
Tues, Jan 15, 9-12

Building Retrofits
Tues, Jan15, 1-4

City Centre Library
1050 University Drive

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