



Overview of Session

- Legislative Framework
- Environmental Management
- Storm Water Management
- Operations
- Environmental Stewardship & Community Involvement
- Climate Change
- Conclusion

An aerial photograph of a coastal town and harbor, likely Nanaimo, British Columbia. The town is built on a peninsula, with a large harbor area. The sky is overcast with some light clouds. The water is calm, and there are some buildings and trees visible in the foreground.

Legislative Framework

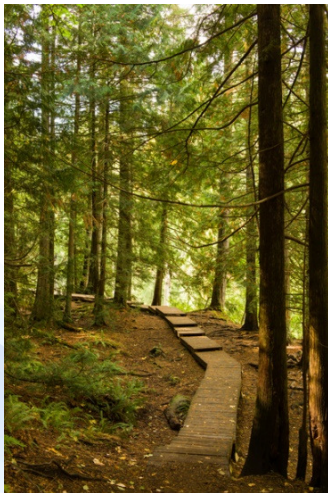
Federal & Provincial Legislation



Federal Legislation

- Fisheries Act
- Species at Risk Act

Provincial Legislation

- Wildlife Act
- Riparian Areas Regulation Act
- Water Sustainability Act
- Contaminated Site Regulation



Legislative Framework

Plans / Bylaws / Policies

Regional District

- Regional Growth Strategy

City of Nanaimo


- Strategic Plan
- Official Community Plan
- Water Conservation Strategy
- Water Supply Strategic Plan
- Parks Master Plan
- Transportation Master Plan
- Neighbourhood Plans



Bylaws

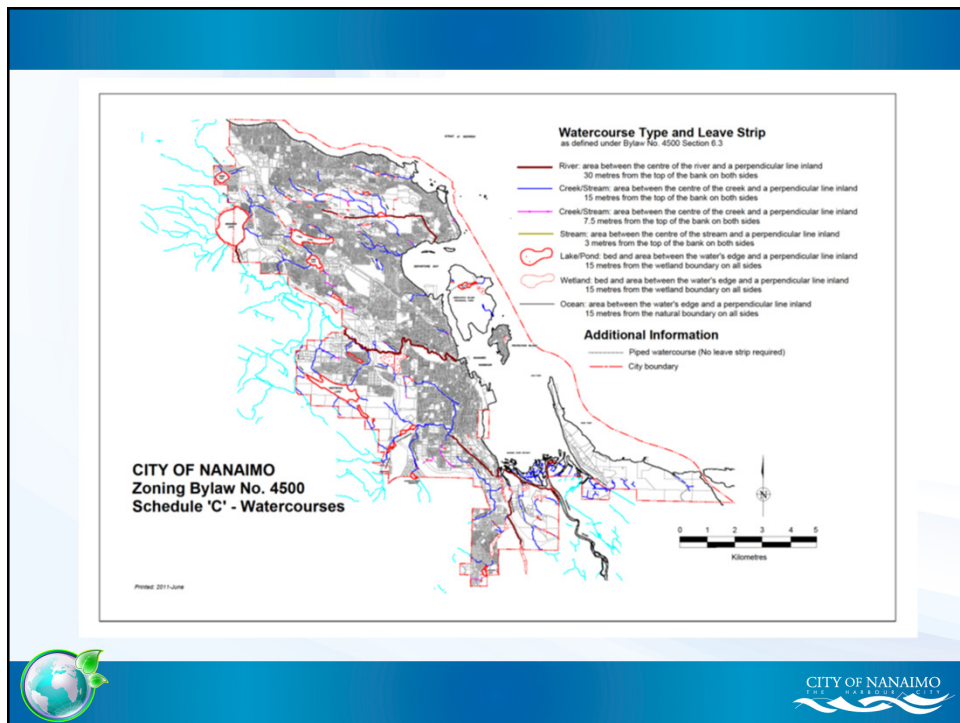
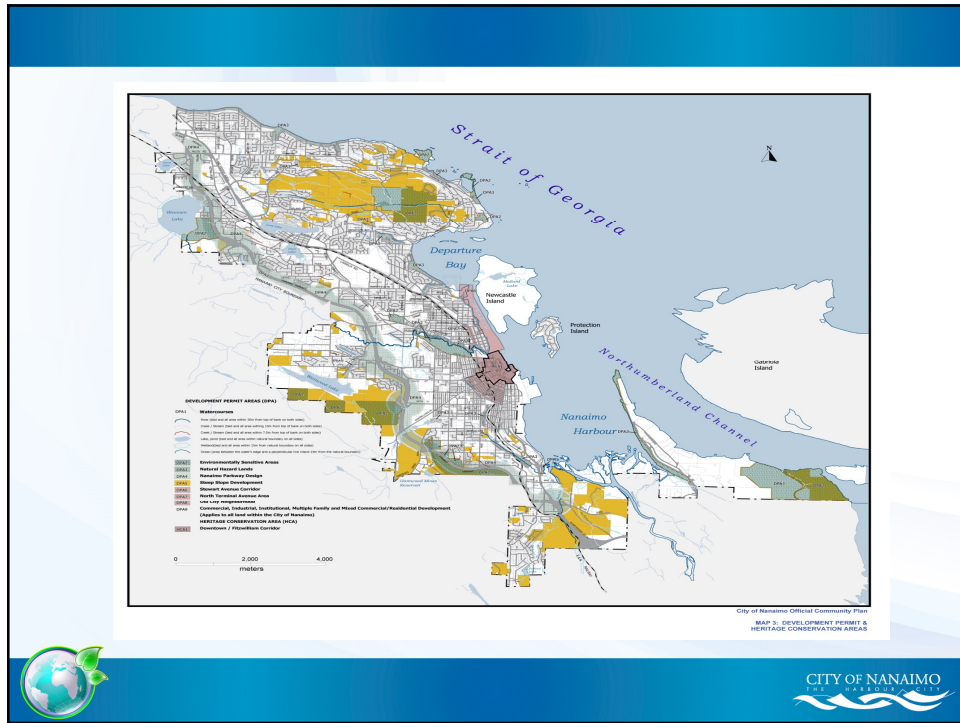
- Zoning Bylaw 4500
- Tree Management and Protection Bylaw No. 7126
- Pesticide Use Bylaw No. 7102
- Regional Emissions Reduction Reserve Fund Bylaw No. 7184
- Soil Removal and Depositing Bylaw 1976 No. 1747

Council Policy

- Energy Conservation and Management Policy
- Purchasing Policy
- Green Building Strategy
- Anti-Idling Policy





Environmental Management

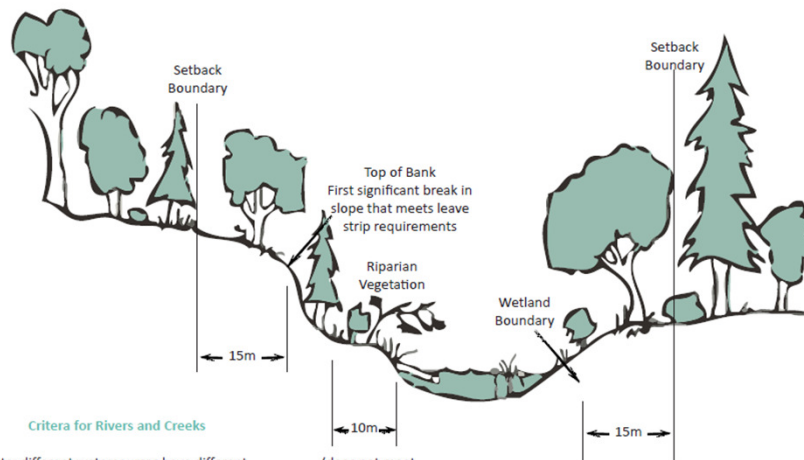
Watercourses

Zoning Bylaw 4500 –
Watercourses – Schedule C

- 15m or 30m setback from top of bank of a stream
- 15m setback from wetland boundary of a lake or wetland
- Variances through DPA



Environmental Management



Criteria for Rivers and Creeks

Note: different watercourses have different setback requirements. These examples use 15 metres. Check with City Planning staff for specific setback.

Criteria for Lakes, Ponds and Wetlands



Environmental Management

Riparian Areas Protection Regulation (RAPR)

- Provincial regulation from the Riparian Area Protection Act
- For the protection of fish and fish habitat only
- Streamside Protection and Enhancement Area (SPEA) measured from high water mark
- SPEA is the minimum protection to avoid HADD under Fisheries Act



Environmental Management

Environmentally Sensitive DPA

- Non-fish bearing watercourses and wetlands
- Terrestrial herbaceous
- Older forest
- SARA (critical habitat protection) and Red/Yellow listed species



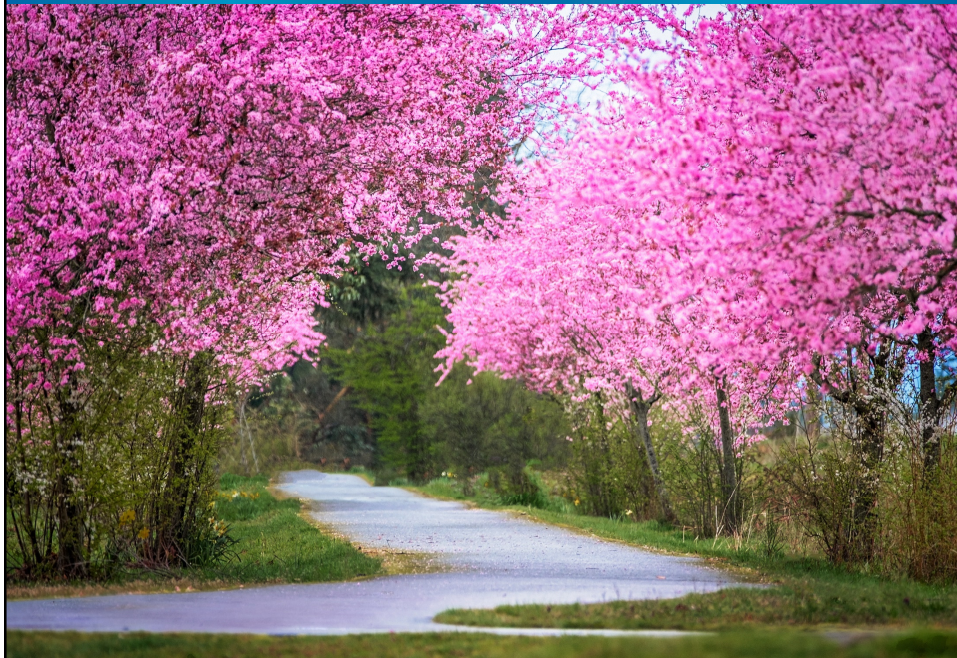
Environmental Management Environmentally Sensitive DPA

Process

- Development application
- Request environmental assessment be completed by Qualified Environmental Professional (RPBio)
- Assessment review by staff
- ESA protection through DP conditions



Urban Forestry



Urban Forestry

Benefits of a well-functioning Urban Forest

- Environmental
 - Sequester Carbon
 - Mitigate Flooding
 - Improve water quality
- Social
 - Create sense of place
 - Mental and Physical Health
 - Food Security
- Economic
 - Natural Asset
 - Extends life of Infrastructure
 - Reduce heating and cooling costs



Urban Forestry



- Developed to fulfill the need for better forest, vegetation and ecosystem management throughout the City.
- Identified the need for a new tree bylaw
- Established a goal of increasing tree canopy coverage by 4% over ten years



Urban Forestry

Bylaw No. 7126 Management & Protection of Trees within the City of Nanaimo

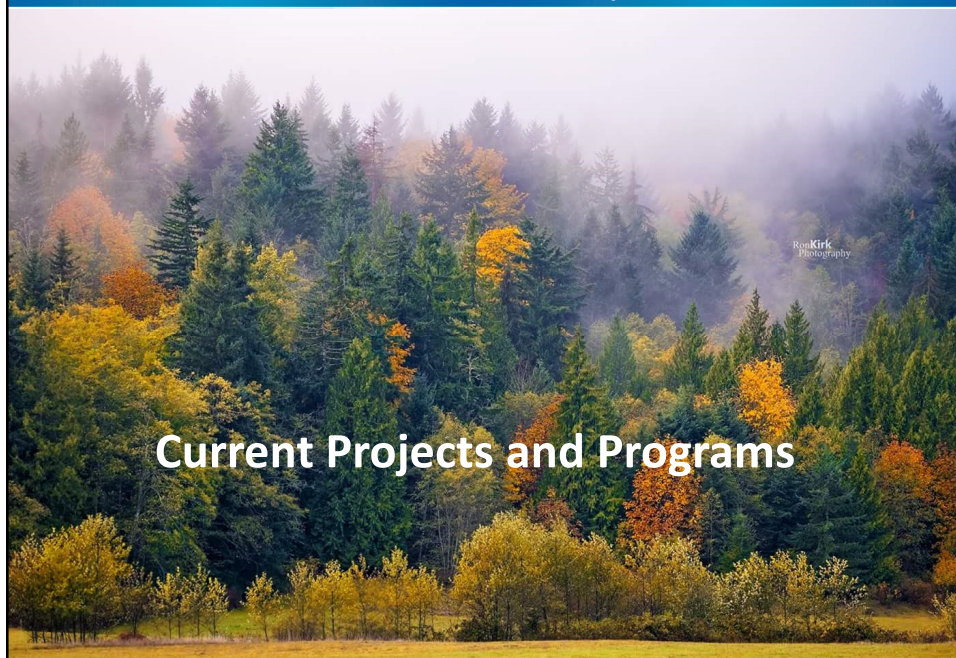


- Adopted in 2013
- A home owner is allowed to **remove up to 4** non “protected” trees in a calendar year without a permit.
- If a permit is required, replacement trees must be replanted.
- If a parcel of land being developed is **over 0.5ha in size, 20% of the trees onsite** must be retained.

It takes many years for a tree planted today to provide the same environmental benefits as retaining a mature tree.



Urban Forestry



Current Projects and Programs

Urban Forestry



TREE VOUCHER
\$20

This voucher may be exchanged for one tree. Redeemable at Green Thumb Garden Centre

Authorised by Patricia McInnis, Urban Forestry Coordinator

Green Thumb GARDENS CENTRE
NANAIMO THE HARDY CITY



\$20 TREE VOUCHERS
(UP TO \$75 VALUE)

The City of Nanaimo wants your help in increasing our urban forest canopy. Nanaimo residents can purchase a \$20 tree voucher here and redeem it for a fruit or coniferous tree at Green Thumb Garden Centre.

Save the World!

PLANT MORE TREES!

PROGRAM DETAILS

- There will be 100 vouchers available for Nanaimo residents on property adjacent to our tree purchase of a tree for \$20 each (cash only)
- No more than 2 vouchers issued per property per year
- All values are final
- Redeemable voucher not to exceed \$75
- Vouchers expire on December 31, 2018

1300 Vouchers sold since 2017!
Funded by money collected through fines, permits and development.




Urban Forestry

Beaufort Food Forest

- Planted in December 2017.
- Collaboration between the City, Neighborhood, MYCDC, and BC Hydro Greening Grant.
- 59 fruit and nut trees and many edible shrubs.
- Watering done by City Park staff and volunteers.
- Will serve to provide, food security, forest cover, educational opportunities, sense of community, wildlife habitat, recreation.



BEAUFORT PARK FOOD FOREST

Beaufort Food Forest Tree List

These gardens were designed to demonstrate edible landscaping in the City.

APPLES: Apples are a healthy, easy-to-grow fruit. They were planted throughout the country by the pioneers who discovered the apple. Apples are a healthy, easy-to-grow fruit. They were planted throughout the country by the pioneers who discovered the apple.

CHERRIES: Cherries are a healthy, easy-to-grow fruit. They were planted throughout the country by the pioneers who discovered the cherry.

PEARS: Pears are a healthy, easy-to-grow fruit. They were planted throughout the country by the pioneers who discovered the pear.

PLUMS: Plums are a healthy, easy-to-grow fruit. They were planted throughout the country by the pioneers who discovered the plum.

OTHER TREES: Other trees include... (list of other trees)

CITY OF NANAIMO
www.nanaimo.ca • 250-756-5200 • parksandrecreation@nanaimo.ca




Urban Forestry

Shaw Tree Planting Grant

- Administered through Tree Canada, Shaw provided \$3000.00 for materials and 30 volunteers.
- 250 trees and shrubs planted.
- Reforested the top of the bank along the Millstone.



Stormwater Management

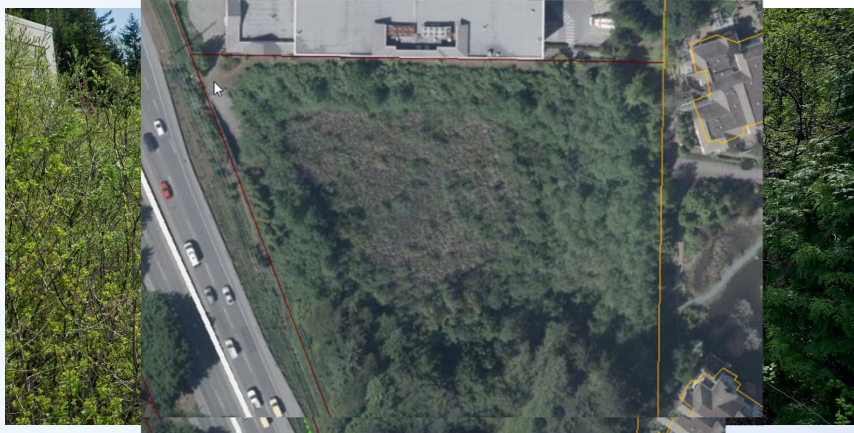
Overview of Policies and Guidelines

- OCP
- Stormwater Management in Nanaimo Guidelines
- Steep Slope Development Guidelines
- Stormwater Planning Guidebook
- ISMP's (Wexford & Walley)
- MoESS Section 7



Stormwater Management

Project Highlights Longwood Station



Stormwater Management

Project Highlights Hawthorne Subdivision



Stormwater Management

Project Highlights Greenrock Industrial Subdivision



Stormwater Management

Adoption of MoESS Section 7

November, 2016

- Capture, retain, infiltrate or reuse 6-Month, 24-hour rainfall (31mm +/-)
- Detain for areas that discharge into watercourses to minimize erosion
- Treatment to remove 90% of suspended particles
- Account for climate change



Stormwater Management

Ongoing Collaboration & Implementation

- Continuing to refine development requirements
- Collaboration with Parks & Recreation and E&PW to identify opportunities
- Review and recommend bylaw amendments to Council



Sanitation Services

- Service Levels
- Regulatory Framework
- Looking Forward



Sanitation Services

GREEN CART <i>(Yard & Food Waste)</i>	BLUE CART <i>(Recyclables)</i>	BLACK CART <i>(Garbage/Landfill)</i>
Weekly 	Biweekly 	Biweekly 
<i>The blue and black carts are collected at the curb every other week. One week you will put out the green and blue carts at the curb. The next week, the green and black carts.</i>		



Cart location and accessibility



100+ streetside receptacles -primarily downtown





28,962 households
+361 in Q1 2019
+443 in H2 2018




Sanitation Services Regulatory Framework

- Waste Management Act
 - Includes Recycling Regulation (EPR Programs)
 - Requires Regional Districts to develop Solid Waste Management Plans and update regularly – RDN waiting approval on latest update
- Local Government Act
 - Confers authority on Regional Districts to establish bylaws related to services and facilities
 - Does not impede Municipalities from setting higher standards
- Solid Waste Management Plan
 - Sets regional goals, targets, and programs
 - Applies to private and public sector activities
- City of Nanaimo Bylaw 7128
 - Municipal Solid Waste Collection Bylaw
 - Last update 2018-DEC-17
 - Sets service levels, rates, and requirements related to municipal collection services
- RecycleBC Collection Contract
 - EPR Stewardship Agency under the Recycling Regulation
 - Contract with City to collect recyclables from eligible curbside households. Expires ?

Sanitation Services

Looking Forward

- New programs included in the RDN Solid Waste Management Plan
- What's in the garbage? – **waste composition study**
- Promote use of the **NanaimoRecycles** App as a primary information source for residents
- Improve collection efficiency through routing optimization
- Continue **citizen engagement** education through hiring of Zero Waste Coordinator
- Monitor safety outcomes associated with automation implementation
- Plan for new resources as the City grows



Fleet Operations

City of Nanaimo
Green Fleet



Nanaimo's Fleet

Fleet Services repairs and maintains over 400 vehicles and equipment

Compact cars to fire rescue equipment



Initiatives to Date

Alternative fuel vehicles

- 4 Hybrid
- 21 Propane / CNG pickup trucks
- 9 CNG garbage truck fleet
- 5 fully electric cars
- 5 fully electric ice resurfacing machines



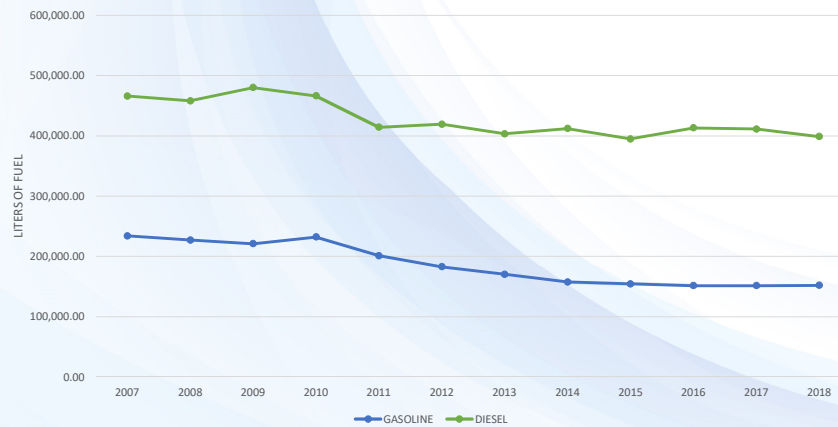
Initiatives to Date

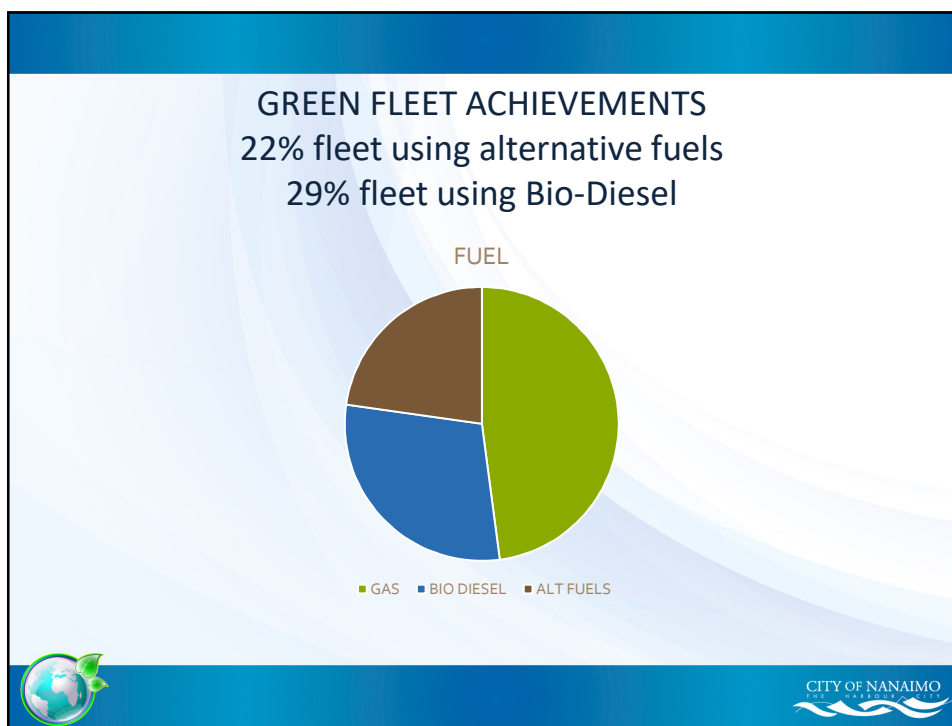
- Installed automated fuel management system
- Implemented a preventive maintenance system
- Adopted a corporate anti-idling policy in 2007
- Implemented a pool car program in 2008
- Adopted bio-diesel 5 blend in 2009



17% Decrease in Diesel fuel used 2007-2018 4% Decrease in gasoline used 2007-2018




10 YEAR DIESEL & GASOLINE USAGE





Current Initiatives

- Partnering with neighbouring municipalities to share best practices
- Right-sizing vehicles at time of purchase
- Annually evaluating the preventative maintenance program
- Provide fuel consumption reports to departments
- Assessing 10 year purchase of vehicles for potential alternative fuel vehicles
- Currently developing a **Corporate Green Fleet Strategy**



Future Goals

- Preparation of formal Fleet Strategy for Council
- Joining the **E3 Fleet challenge program**
- Complete a Corporate Green Fleet Strategy with data provided from E3 Fleet review



Water Resources



Water Resources



The diagram illustrates the water supply system starting from the Nanaimo River. It shows the flow through the South Fork Water Treatment Plant, then to a Domestic and Fire Flow Storage Reservoir. From there, water is distributed to Commercial/Industrial Demand and Residential Demand. A Balancing Reservoir is also shown, which feeds into Residential Demand. A Fisheries Rearing Flow Release is also indicated from the river.

- Domestic Supply
- Fire Water Supply
- Fisheries Flow

- City of Nanaimo
- Snuneymuxw First Nation
- West Extension Water District

Emergency / Temporary Supply:

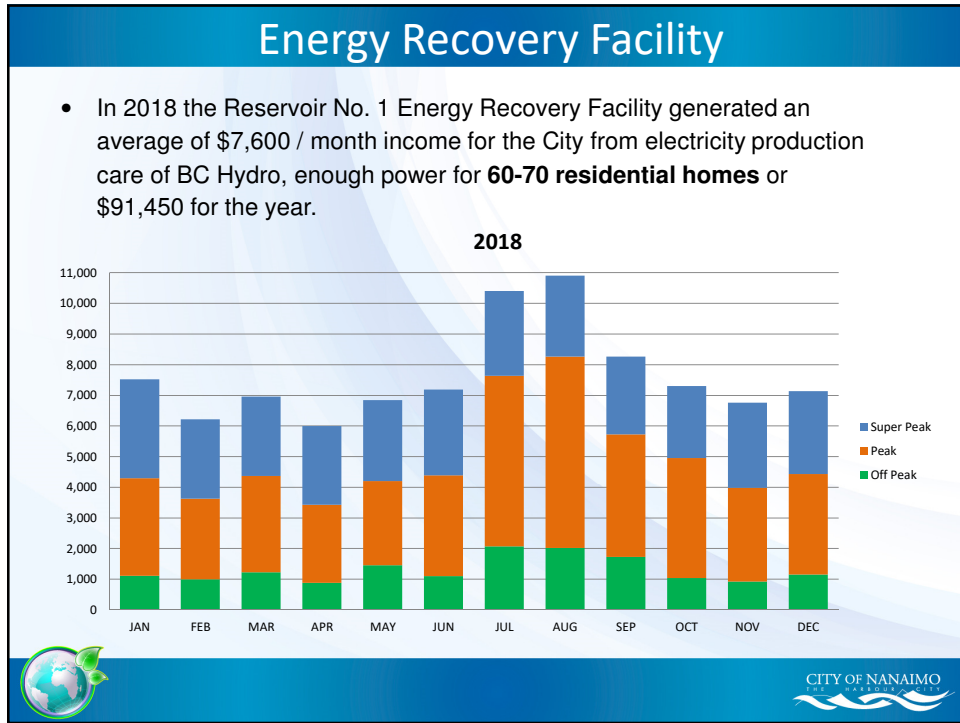
- District of Lantzville
- North Cedar Improvement District
- Nanaimo Forest Products (Harmac)



Energy Recovery Facility

The photograph shows the interior of an energy recovery facility. It features several large industrial pumps with blue and red components, connected to a network of pipes. The facility has a high ceiling with wooden beams and large windows, and the floor is covered with a metal grating.





Fisheries Release

South Fork Dam – Fisheries Release:

- Min. Requirement below South Fork Dam: **0.28 m³/s** (10 Olympic sized pools / day)
- Additional Requirement Downstream of the Nanaimo River Bridge (Above Nanaimo Forest Product’s Water Intake), Min. Flow: **3.9 m³/s** (138CFS)

Shared Allocations between:

Nanaimo Forest Products 75 %

City of Nanaimo 25%

Water Conservation

How do we manage and encourage efficient water use?

- Universal Water Metering (since 1983)
- Tired Billing Rate (more water use = more you pay)
- Full-cost pricing (since 1992)
- Water Audits
- Regulation of permitted uses and summer watering restrictions
- Annual user rate increases to ensure funding sustainable for major capital and ongoing operations (2007)
- Low-Flow Toilet Rebate Program / BC Hydro Rebates (since 2009)
- Computerized water system monitoring and operation (SCADA)
- 2008 Water Conservation Strategy (updated 2014)
- Instrumentation: Rainfall / Snow / River Flows
- RDN & *Team WaterSmart* partnership

**Managing
your water**
Tap into it.

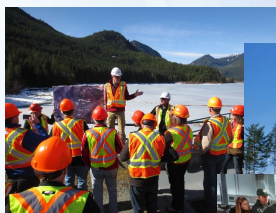


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THE CAPITAL CITY

Water Conservation

Public Education

- Partnering with the Regional District of Nanaimo Team WaterSmart program includes a Water-Wise Education component.
- School presentation tours in conjunction with Forestry companies







team
watersmart
because every drop counts



CITY OF NANAIMO
THE CAPITAL CITY



Residential Use - Water Demands

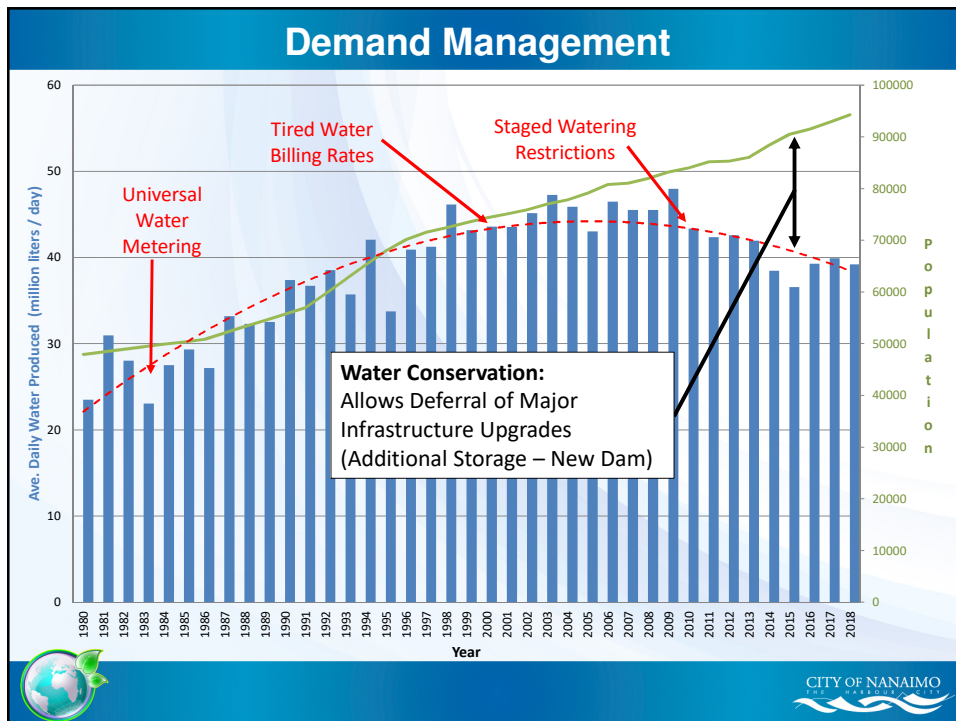
	Total Residential Daily Use (liters per capita per day)		
National Average	274		
British Columbia Average	353		
City of Nanaimo Average (2007 - 2012)	274		
City of Nanaimo Average (last 5 years)	<u>228</u>		
	↓ - 10 %		

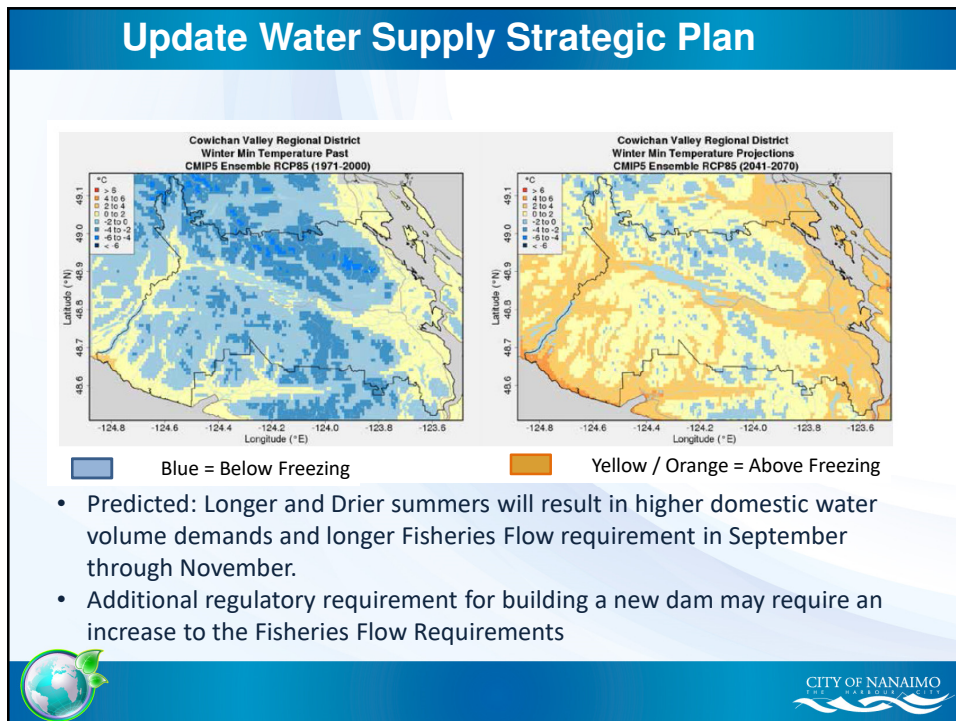
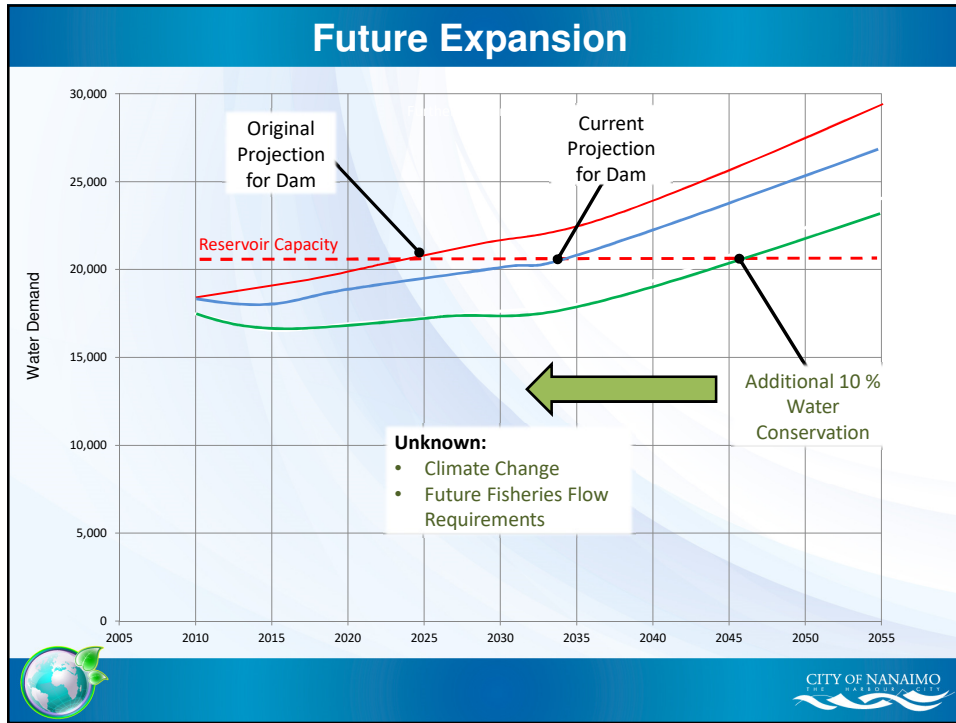


The updated 2014 Water Conservation Strategy Targets a 10 % reduction over the next 10 years

Source: Environment Canada – 2011 Municipal Water Report







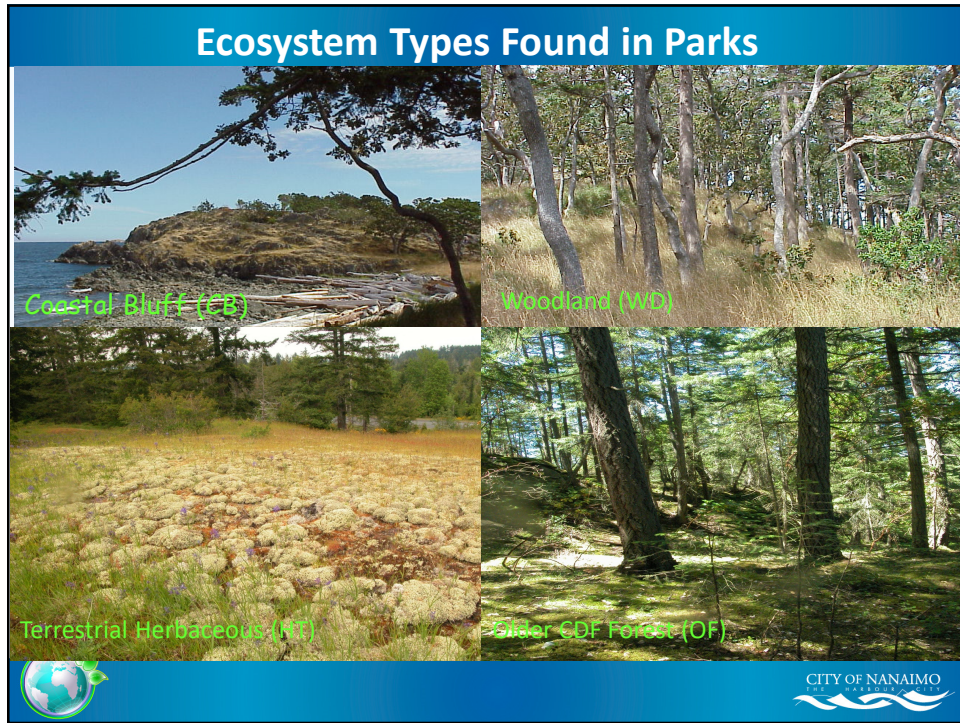


Parks Operations

Parkland in Nanaimo	
Owner	Hectares
City of Nanaimo	1079
Province	317
Nature Trust of BC	133
Other	188
Total	1717

City Parkland by Zone	
Zone	Hectares
PRC - 1	753.75
PRC - 2	192.73
PRC - 3	132.30



Parks Operations

Examples of rare species found in Nanaimo Parks



Hocksackia pinnata
Bog bird's foot trefoil



Bidens amplissima
Vancouver Island Beggartick



Aster curtus
White-top aster



Parks Operations

Restoration Projects in Parks Vancouver Island Beggarticks

- SARA listed species
- 59 sites in BC/
Washington
- Funding awarded through
Environment and Climate
Change Canada
- Reintroduced to Jingle
Pot (Third Street) Marsh
- Only site in Nanaimo
- 165 plants observed



Parks Operations

Restoration Projects in Parks

Bowen Park Side Channel

- In 2007, a major fish bypass channel was constructed from Deadman Falls upstream to a point above major fish barriers
- Side channel is 857 m long and contains significant fish habitat
- Ongoing partnership with Fisheries and Oceans and Vancouver Island University



CITY OF NANAIMO
THE QUALITY OF LIFE

Parks Operations

Restoration Projects in Parks

Knotweed / Hogweed Control

- Contract with Invasive Species Committee since 2015
- Education and Awareness
 - Coordinated between CISC and City
- Field Program (Sites Treated)
 - 140 Knotweed Sites
 - 7 Giant Hogweed Sites
- Data collected and posted to provincial database (IAPP)



CITY OF NANAIMO
THE QUALITY OF LIFE

Parks Operations

Conservation Partnerships Buttertubs Marsh Conservation Area

- 55 Ha wetland complex currently co-managed by the Nature Trust of BC, Ducks Unlimited and the City of Nanaimo
- Ongoing environmental research and training by VIU in the West Marsh of Buttertubs
- Conservation Area Management Plan adopted by Council in 2016







Parks Operations

Municipal Natural Capital Initiative:
Buttertubs Marsh Pilot Study

Buttertubs Marsh Conservation Area is a 55 HA reclaimed wetland/floodplain

Site and natural assets: Entire marsh under consideration including adjacent forest.

Emerging project model: Determine role marsh plays in mitigating localized flooding and increasing storm events; determine value of the Marsh in attenuating downstream flooding on the Millstone.

Possible outcome: developing a marsh restoration and maintenance plan built around an asset management approach.










Parks Operations Community Outreach Partners In Parks Program (PIP)

- The Volunteers in the Park Program (VIP) was initiated by the City in 1982.
- Since then it has been renamed Partners in Parks Program (PIP) and grown to include:
 - Neighbourhood Playground Development
 - Community Gardens
 - Park Beautification and Tree Planting
 - Gatekeepers & Park Naturalists
 - Public Art
 - Invasive Plant Removal Work parties
 - Park Ambassadors
 - Adopt-A-Park Program
 - Eco Club/School Group Ecological Stewardship Projects (invasive plant removal, restoration, monitoring)




Parks Operations

Broom Busters Partnership (2014 – 2019)

- 60 Volunteers involved in cutting flowering broom
- City coordinates broom chipping and disposal at the end of the season
- Broom cut on:
 - 33 City Parks
 - Over 50 sections of City road right of way
 - 8 Elementary Schools
 - 18 Commercial Properties





Parks Operations

Student Ecological Stewardship Program

Examples of Student Ecological Stewardship Projects:

- Plant Identification – native and invasive
- Plant Mapping (Barefoot Mapping)
- Invasive Plant Removal
- Restoration - replanting & watering of new native plants
- Student Partnerships with NS3 and the Great Shoreline Clean Up Initiative ie. Trash to Treasures
- Involvement in the **Adopt-a-Park Program** – ongoing stewardship in one particular park



Departure Bay Elementary School & Stream Keepers



Restoration in
Woodstream Park in 2016



Departure Bay Elementary School & Stream Keepers



Departure Creek Realignment and Enhancement Project in 2018



Dover Bay Secondary School Eco Club



Periwinkle Removal & Snowberry Planting



Tree Planting – Camas Park



Broombusting – McGirr Sports Fields



MyCDC & John Barsby School



**Chase River
Restoration Project**







Parks Operations Volunteer Recognition



ADOPT-A-PARK
KEEPING NANAIMO BEAUTIFUL
Volunteers from
bill's place
help maintain this park.
This project supported by TD Friends of the Environment Foundation
www.nanaimo.ca • 250.756.5200





Certificate of Appreciation
Presented to
Bill's Place
for valuable contributions to stewardship
time in Nanaimo's parks and greenpaces.
Bill McKey
Mark, City of Nanaimo
Ian Topp
City of Nanaimo Councillor
Chair of Parks & Recreation Committee
Piper's Loam Park
Friday, May 3, 2017



Climate Action in Nanaimo

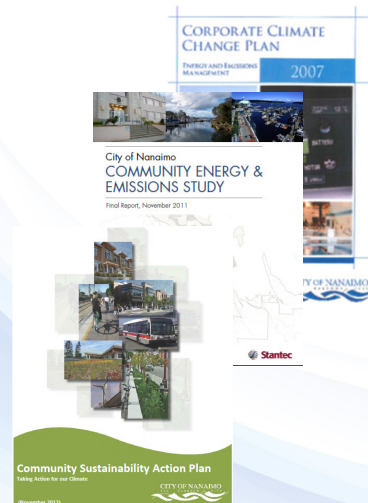
1. Corporate Energy and Emissions Management
2. Community Energy and Emissions Management
3. Climate Resiliency Strategy
4. Climate Emergency Declaration
 1. Next steps and group discussion



Climate Action Update

Policy Development


- Corporate Climate Action Plan (2007)
- Community Sustainability Action Plan (2012)
 - Energy Conservation and Management Policy
 - Purchasing Policy – Green Purchasing
 - Green Building Strategy
 - Anti-Idling Policy



Climate Action Update


Corporate vs. Community GHGs

Corporate Emissions





Objective:
Carbon neutral operations since 2010
(Climate Action Charter)

Community Emissions



Objective:
Community in OCP
(LG Act, Bill 27 – 2008)



Corporate Energy and Emissions

What we are doing

- Partnerships / Programs / Agreements
- Collaboration with other departments
- Incorporating efficiency into projects
- Funding from Sustainability or General Capital Reserves
- Sharing Results
- Climate Action Revenue Incentive Reporting (CARIP)





Corporate Energy and Emissions

How are we doing?

- Targets, monitoring, reporting
- Low-hanging fruit
- Program Changes
 - Conservation
 - Low Carbon Electrification

Over the past 10 years

- Reduced emissions by 42%
- Received \$1.93M in incentives
- Annual Energy & Cost Savings \$ 1.1M

Year	Actual GHG (tonnes)	Target GHG (tonnes)
2007	4,800	4,800
2008	6,200	4,600
2009	5,600	4,400
2010	5,000	4,200
2011	4,200	4,000
2012	2,900	3,800
2013	3,200	3,600
2014	2,800	3,400
2015	2,800	3,200
2016	3,000	3,000
2017	2,800	2,800
2018		2,600
2019		2,400
2020		2,200

Corporate Energy and Emissions

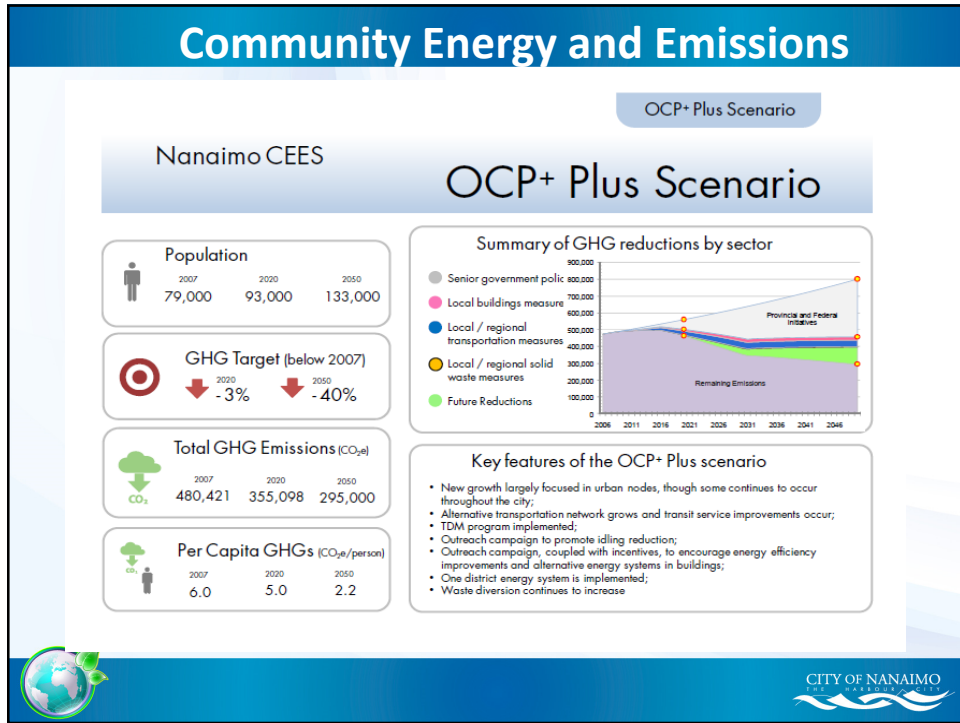
Plans moving forward

Update :

- Energy Conservation and Management Policy
- 2007 Corporate Climate Change Plan (Energy and Emissions Mgt.)

Continue to develop:

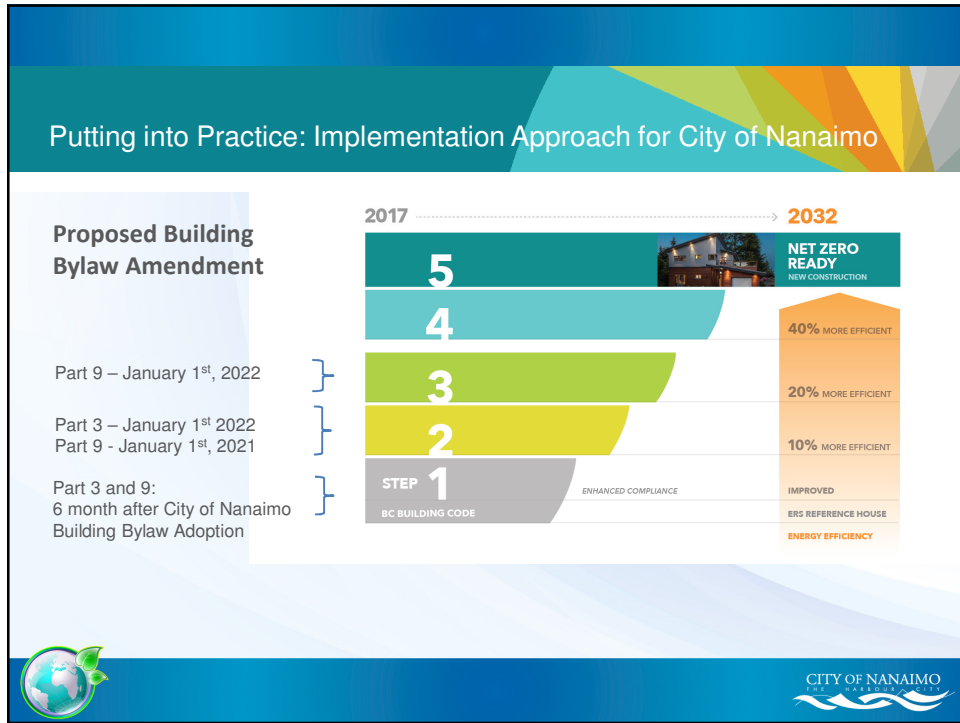
- Low Carbon Electrification – Feasibility and benefits of Retrofits and New Construction Projects
- Fleet Electrification – BC Hydro Study Funding – Charging infrastructure and vehicle options
- Explore and implement new technologies and alternative energy options



Community Energy and Emissions

Actions Taken to Date

Theme	Strategies	Examples
Land Use and Transportation	<ul style="list-style-type: none"> • Compact, Complete Community • Alternative and Active Transportation • Low Carbon Mobility 	<ul style="list-style-type: none"> • Urban Containment Boundary • OCP Policy • EV Charging • Fleet Greening
Buildings	<ul style="list-style-type: none"> • Energy Efficient Existing Buildings • Energy Efficient New Buildings 	<ul style="list-style-type: none"> • Realtor Energy Efficiency Program • Realtor Energy Efficiency Rebate • BC Energy Step Code
Solid Waste	<ul style="list-style-type: none"> • Composting / Zero Waste 	<ul style="list-style-type: none"> • Sort Toss Roll



Climate Action Update

Climate Resiliency Strategy

Two parts:

- Sea Level Rise Mapping Study
 - Determines the extent of impacts of sea level rise and storm surge for 2050 and 2100 along the City's shoreline.
- Climate Resiliency Strategy
 - To identify risks and vulnerabilities affecting city land use, infrastructure, parks, public health and safety. Provide direction to help minimize or avoid the identified risks and vulnerabilities.

Climate Action Update

Global Covenant of Mayors Covenant

The Global Covenant of Mayors Canada is a collaboration between the Federation of Canadian Municipalities, ICLEI Canada, the Global Covenant of Mayors Secretariat and the International Urban Cooperation Project supported by funding from the European Union.

The initiative combines two leading domestic climate programs, the Partners for Climate Protection (PCP) program and Building Adaptive and Resilient Communities (BARC), with the leading global climate program. Together we can further advance Canadian local climate action by adding value, opportunities and streamlined support for members.











Climate Action Update



Global Covenant of Mayors Covenant

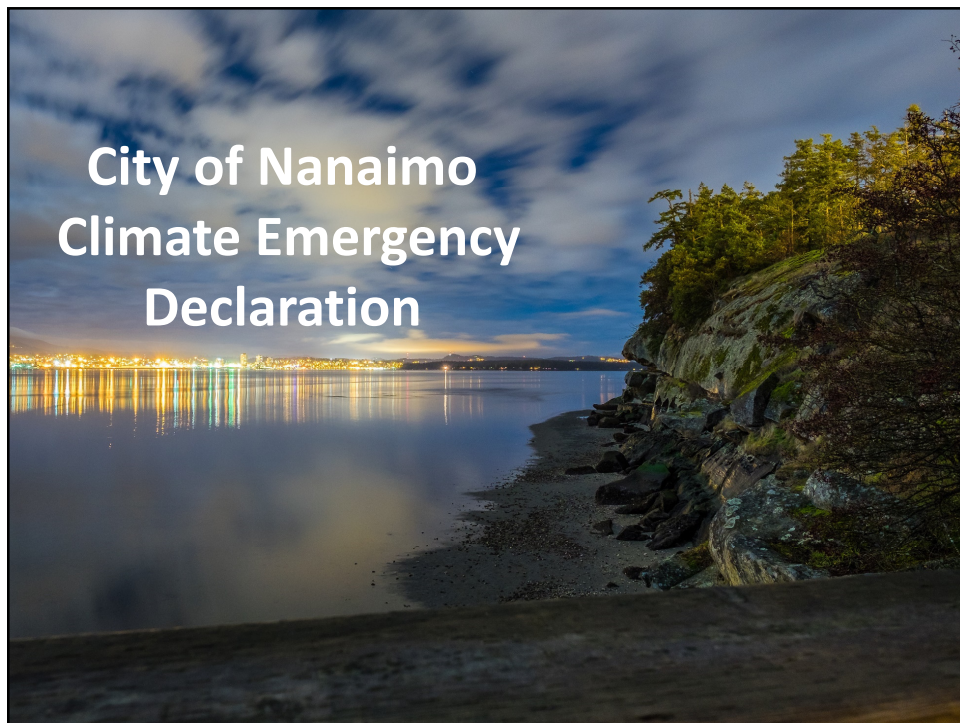
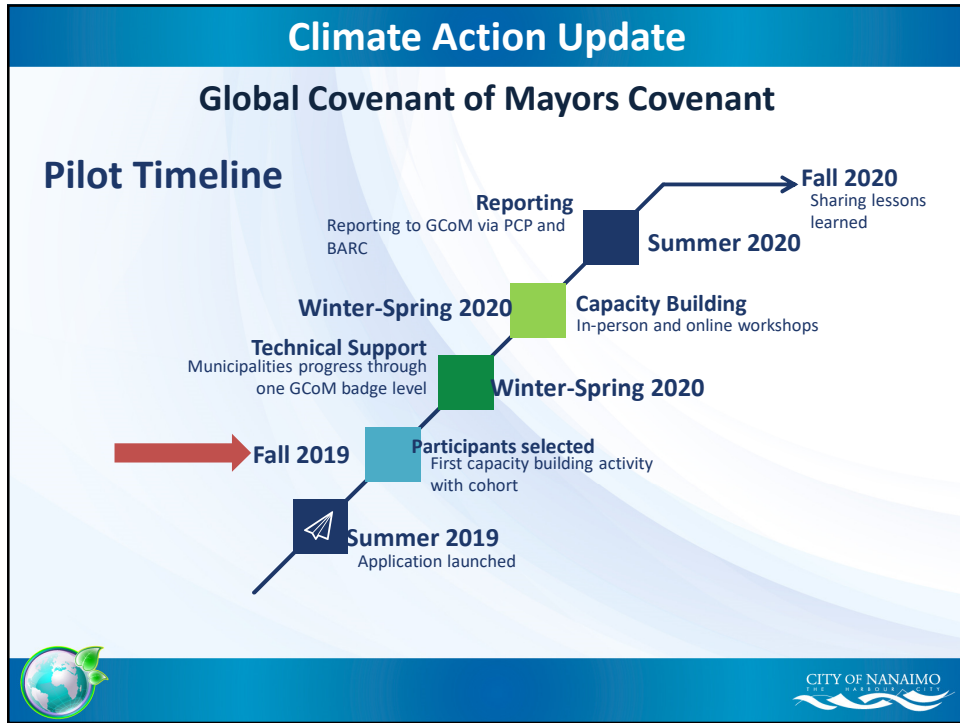
What is the Showcase Cities Pilot Project?

- Tailored **workshops** for municipal staff on themes including GHG inventories, risk and vulnerability assessments and climate change adaptation and mitigation planning
- **One-on-one support** for municipal staff working through local climate planning processes
- Assistance with reporting to the **GCoM, Partners for Climate Protection (PCP) program** and **Building Adaptive and Resilient Communities (BARC) program**
- Access to exclusive **networking opportunities** and showcasing of municipal actions nationally and internationally
- **Free of cost** for Canadian municipalities



The diagram is a circular flow with four segments: 'Technical support' (top, hammer icon), 'Report' (left, checkmark icon), 'Capacity Building' (right, clipboard icon), and 'Network' (bottom, handshake icon). The segments are connected by a circular path.



City of Nanaimo Climate Emergency Declaration

On April 29th, 2019 Council declared a Climate Emergency with the following actions:

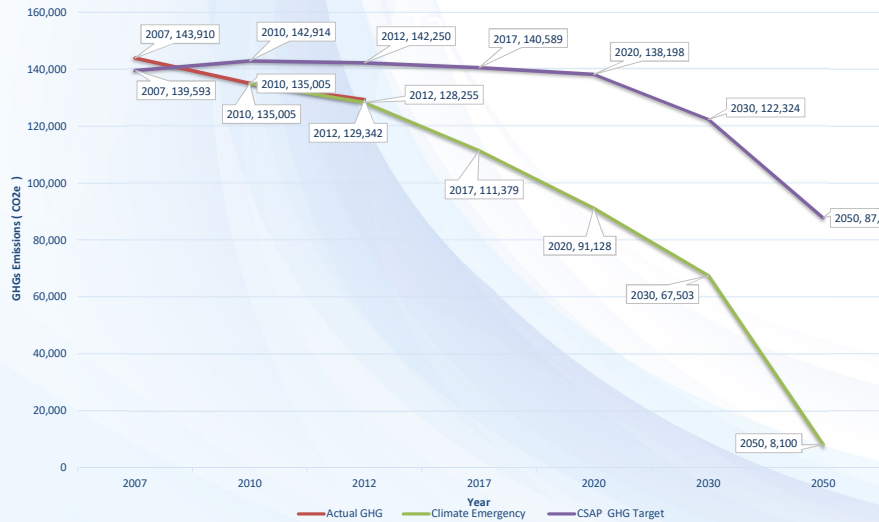


- The Regional Emissions Reduction Reserve be moved to a new reserve fund for the purpose of supporting projects, plans and initiatives that reduce the **City of Nanaimo's community wide CO² emissions to between 50% to 58% below 2010 levels by 2030, and between 94% and 107% below 2010 levels by 2050.**
- The framework, strategies, actions, and implementation of the City of Nanaimo Community Sustainability Action Plan be updated to reflect the target goal, based on the information contained in the latest Intergovernmental Panel on Climate Change report.



City of Nanaimo Climate Emergency Declaration

Comparing Community Emission Reduction Targets



City of Nanaimo Climate Emergency Declaration		
Making Choices on Further Action		
Policy Tool	Potential Impact	Description
Education and Outreach	Low ~ 0 – 10% uptake	<ul style="list-style-type: none"> • Low effort, low cost, low result • BUT foundations for other actions (Still necessary!)
Non-financial incentives	Low to Medium ~ 10 to 50% uptake	<ul style="list-style-type: none"> • Infrastructure / amenities to encourage action
Financial Incentives	Medium ~ 50 to 75% uptake	<ul style="list-style-type: none"> • Rebates, pricing, tax incentives • Higher cost, higher impact
Regulation	High ~ 75 to 100% uptake	<ul style="list-style-type: none"> • Requirements that are often enforced (i.e. Bylaws) • High impact

