



Envisioning a Carbon Neutral City

Modeling a 100 Year Sustainability Vision for the City of North Vancouver

Richard White
City of North Vancouver
September, 2010

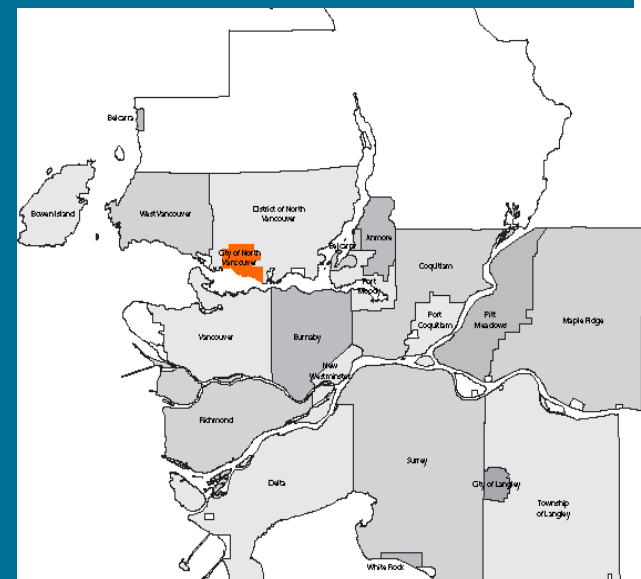




Community Context

City of North Vancouver

- Small, urban municipality (4.6 sq mi)
- North Shore in Metro Vancouver
- 48,000 residents
- Employment centre
- Steady growth (1% annually)
- Highway and ferry connections
- Recognized for commitment to sustainability
- Among the lowest per capita GHG emissions per capita in BC and Canada



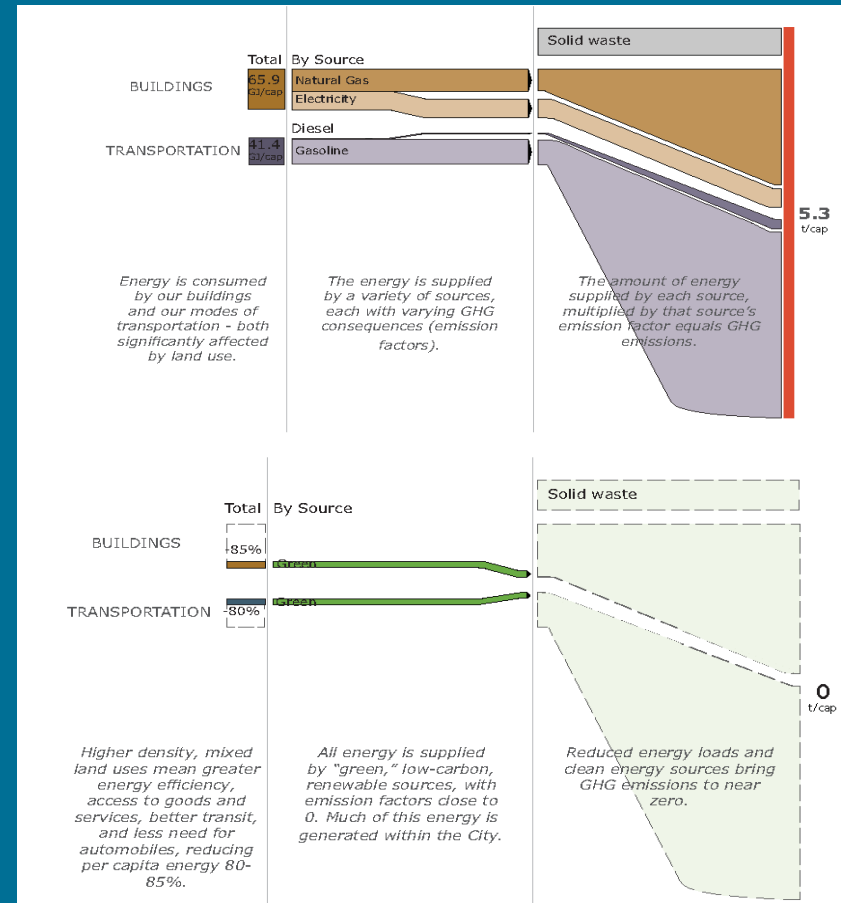


The Tools

The 100 Year Sustainability Vision is a concept plan developed through a participatory charrette process.

Our broad targets:

- GHG emissions by 80% below 2007 levels by 2050
- Net zero carbon emissions by 2107





The Tools

- Identification of community goals
- Modeling a range of development pattern scenarios
- Creation of specific design strategies for implementing targets





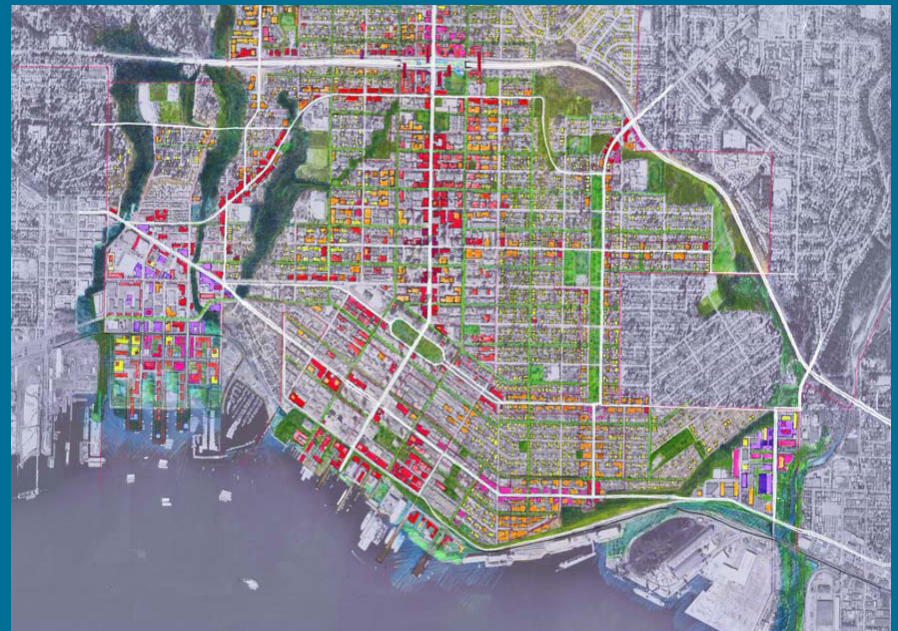
The Tools

The tool is appropriate to:

- Develop scenarios
- Assess implications against policies
- Determine strategies for implementation

Scalable:

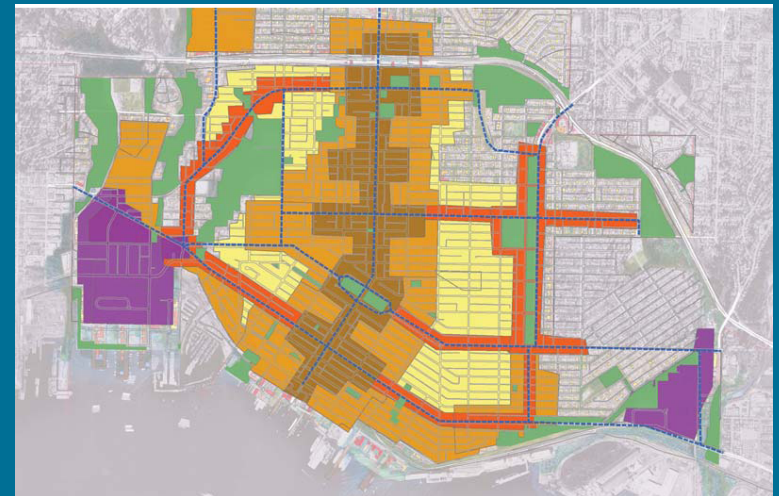
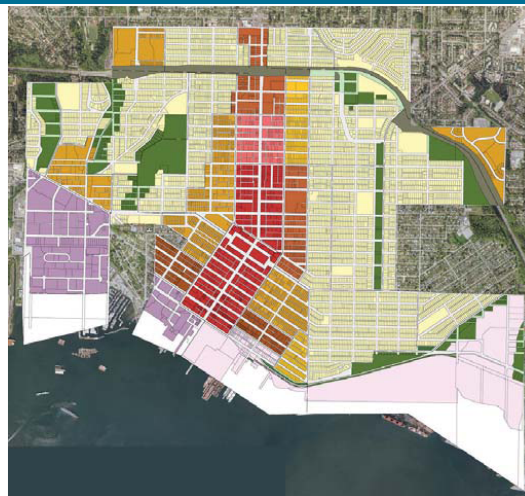
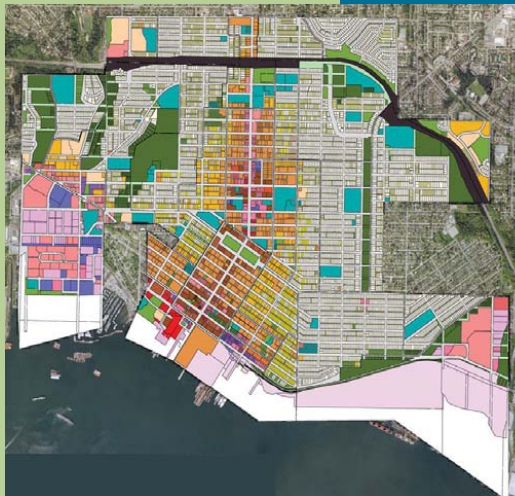
- Neighbourhood
- Community
- Region etc.





Process

- Generate preliminary low-GHG diagrams
- Generate future development patterns and Vision
- Iteratively test alternate design strategies through GIS
- Translate Vision into digital development pattern map
- Test final map to measure performance





Assumptions

- Technological advancements anticipated (based on available data and educated judgment)
- Trip lengths and mode splits estimated for transportation modeling (available data aggregated regionally)





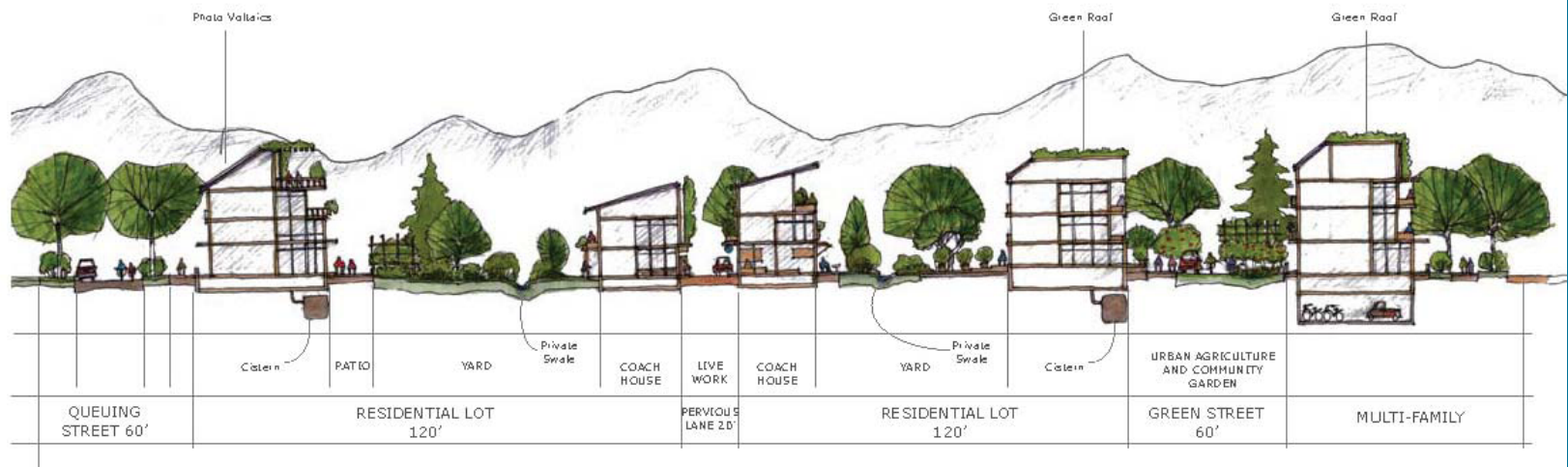
Results

- Ability to quickly measure GHG impacts of specific design choices during an iterative and fast-paced design process
- Role of neighbourhoods in reduction of GHG emissions made apparent through comparison of related transportation emissions.



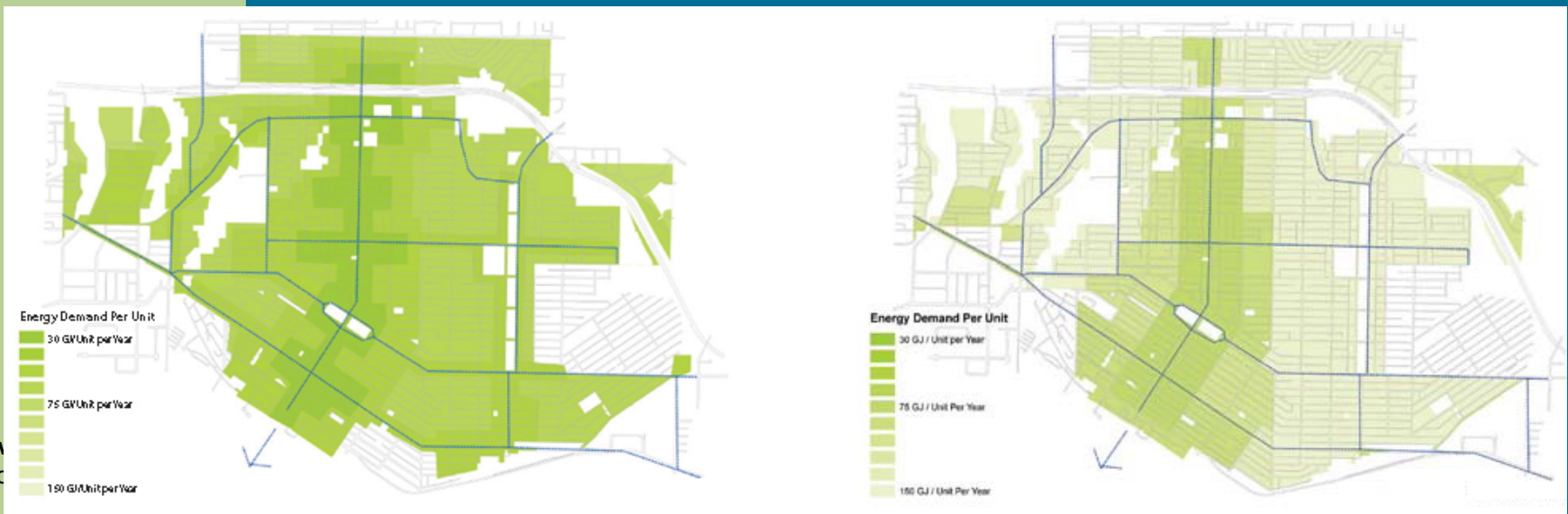
Results

- Challenge of an 80% reduction by 2050 and net-zero emissions by 2107 demonstrated as achievable
- Used to inform Community Energy and Emissions Plan (2010) and OCP 2021 + Beyond (underway)



Results

- Municipal urban form decisions alone can reduce per capita GHG emissions by more than 30%





Responsibilities

- Council leadership (Centennial celebrations)
- Staff resources and data
- UBC Design Centre for Sustainability project team of faculty, students and research staff
- Technical expertise
- District of North Vancouver
- Squamish Nation
- Community stakeholders and government agencies:
 - BC Hydro
 - Terasen
 - Translink
 - local business
 - community groups
 - advisory body members
 - school district



Lessons

Strengths

- City-wide (and beyond)
- Informs urban form and land use choices in future
- Modeling supported collaborative design process
- Widespread participation
- Transparency of methodology
- Vision can be easily understood

Weaknesses

- Limited transportation modeling
- Only building and transportation emissions were considered
- Did not integrate possible behavioural changes

Challenges

- Data availability
- Collaborative process requires additional staff resources





Outcomes



- Exposed staff and community to long term Vision
- Informed more detailed modeling for Community Energy and Emissions Plan
- Background for upcoming revision of Official Community Plan (OCP 2021 + Beyond)