

The Haida Gwaii Community Electricity Plan

Standing Technical Committee
Meeting #1
April 28, 2007
Tlell

Introductions

- Sheltair
 - Samantha – Technical Process Coordinator
 - Innes – Project Director & technical expert
- BC Hydro
 - Roger – Distribution Planning
 - Mahta – Distribution Engineering
 - Alex – Alternative Energy

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Meeting Objective

- To gather information on supply and conservation (demand side management) options, based on local knowledge.

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STC Terms of Reference

- Mandate of STC:
 - To provide advice to the CEP Technical Team on demand reduction options, electricity supply and implementation strategies that will be successful and be supported in Haida Gwaii communities.
- Role:
 - Advisory

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Scope of the CEP

- Limited to electricity (not energy) issues:
 - Conservation and supply
- Considers the electricity needs of all Haida Gwaii / Queen Charlotte Island communities

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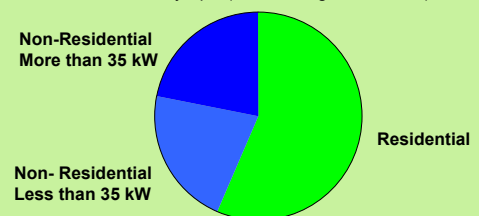
Current Distribution and Supply System Overview

[BC Hydro Presentation](#)

Review of Electricity Consumption Baseline & Forecast

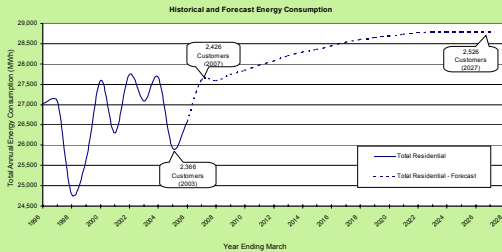
Current Electricity Consumption

Electricity Split (Year ending March 2006)



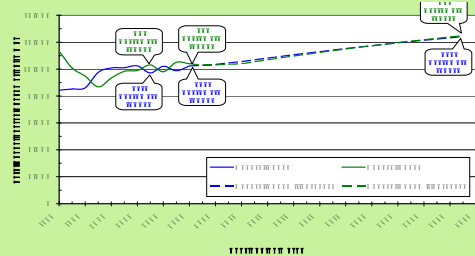
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Historical and Forecast Energy Consumption - Residential



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Historical and Forecast Energy Consumption - Commercial



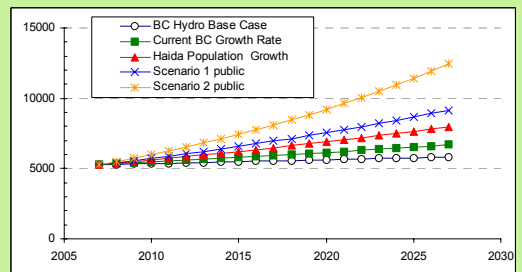
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Growth Scenarios - Assumptions

- Base Case (BC Hydro):
 - Recent trends (by rate category)
 - Growth rates in use per account based on Northern region of integrated area growth
 - Population growth for the QC Health Area from BC Stats model
- Scenario 1 & 2:
 - Community input

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Population Growth



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Demand Side Management

EnerGuide Audit Results
Residential End Use Survey Results
DSM Options

EnerGuide for Houses Audit Results

- Provide EGH results
- Compare to typical new (EGH70) and R2000 (EGH80)
- Provide space heat info (wood, oil, electricity, propane)
- Portion of home with electric heat
- Portion with electric hot water
- Segmentation of single family versus row or apartment

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Description of the Energuide Program

- Vintage/condition EGH
- Old House 0 TO 50
- Upgraded old house 51 to 65
- Typical new 66 to 75
- Energy efficient new 76 to 82

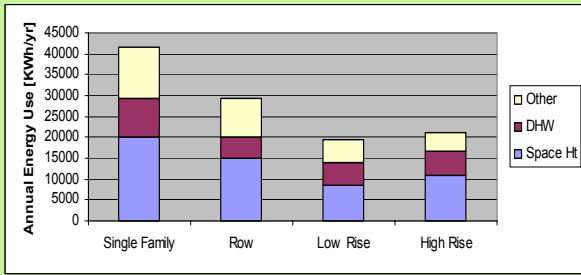


Electricity Use by Building Type

Segment	BEPI [KWh/sq m/yr]	Peak [W/sq m]
School	70	35
Office	194	50
Hotel	149	32
High-rise MURB	77	21
Retail	234	48
Hospital	196	56

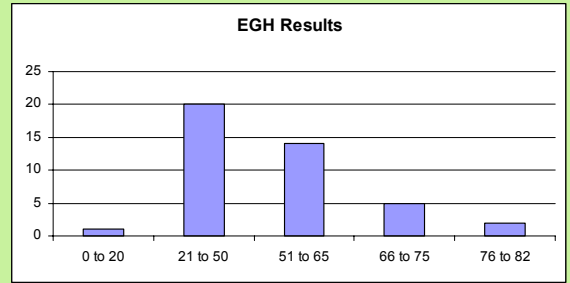
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Electricity Use by Housing Type



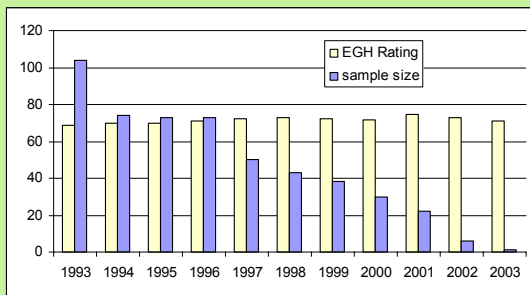
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Results of Audits on HG



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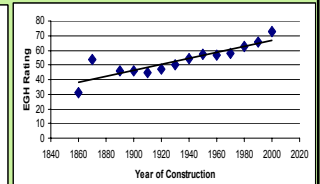
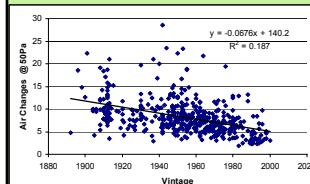
EGH by Vintage in BC



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Housing Construction Trends

- New homes are getting more energy efficient
- BUT
- They are also getting larger, and we are filling them with more gadgets

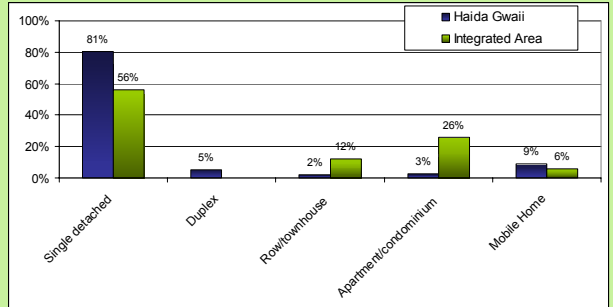


Residential End Use Survey

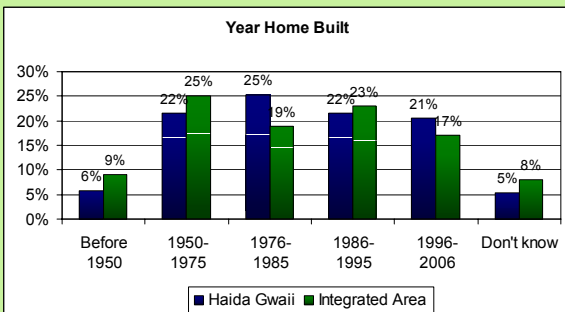
- Conducted in November 2006
- 196 surveys completed
- Results will be used to identify opportunities for cost effective demand side management measures

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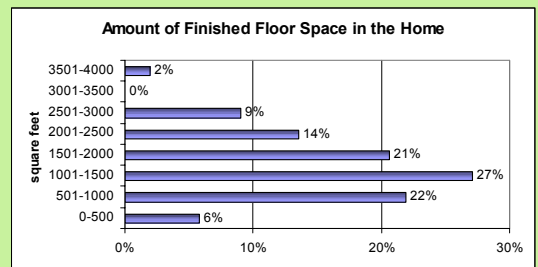
Building Stock



Building Stock Vintage

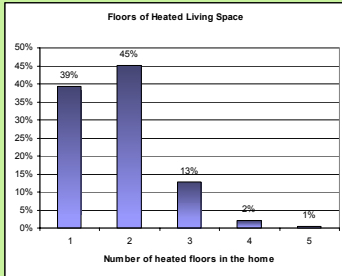


Finished Floor Space



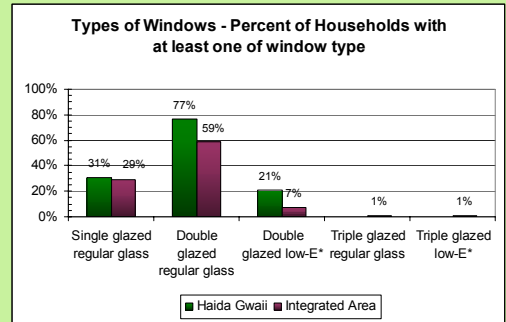
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Heated Floors



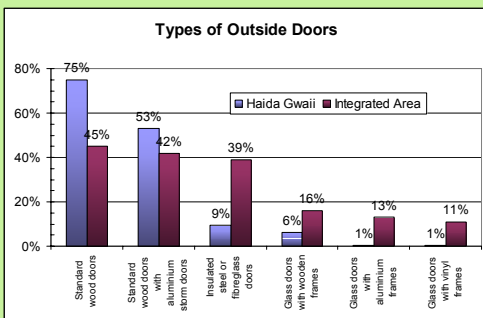
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Windows



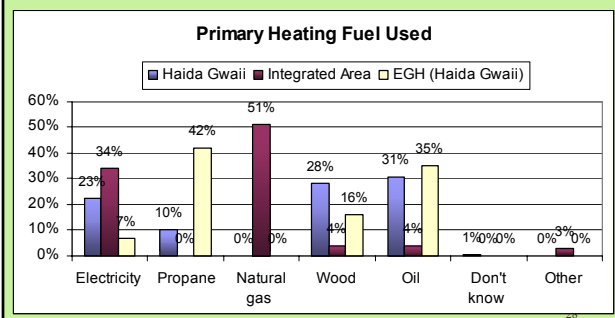
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Doors



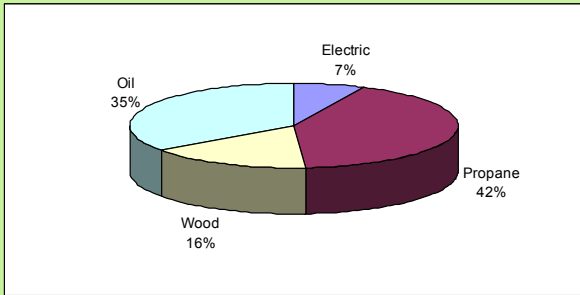
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Heating Fuels

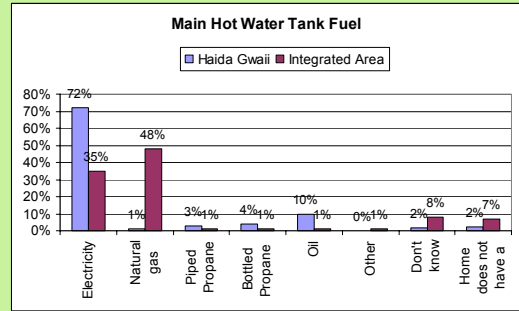


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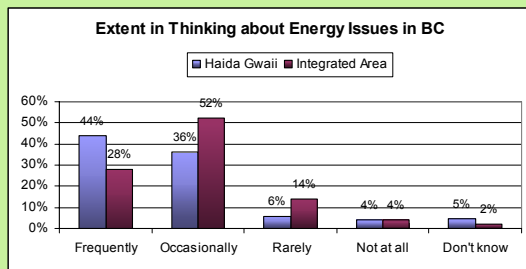
EGH Results: Primary Space Heat



Hot Water Heating



Thinking about Energy



Demand Side Management Options

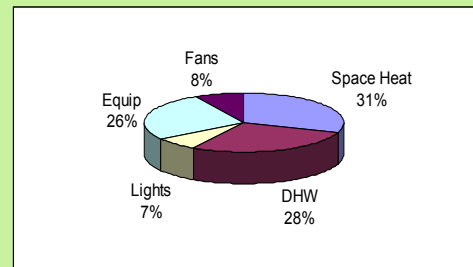
- DSM
- Customer Side Alternatives
- Emerging technologies

DSM Options

1. Thermal Envelope (walls, windows, roof, foundation)
2. Space Heat
3. Ventilation/air leakage
4. Domestic Hot Water
5. Appliances
6. Lighting

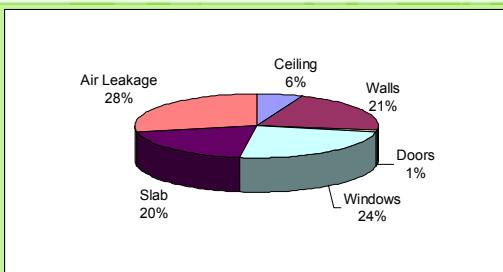
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Typical Energy Use in Homes



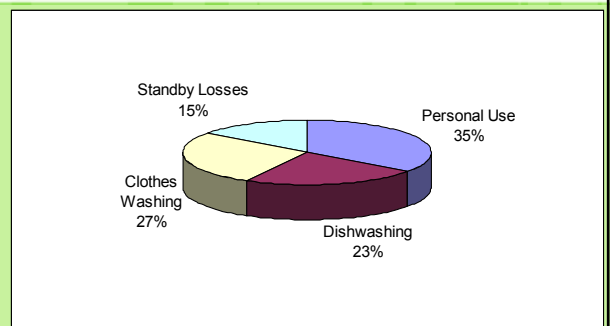
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Component Heat Loss

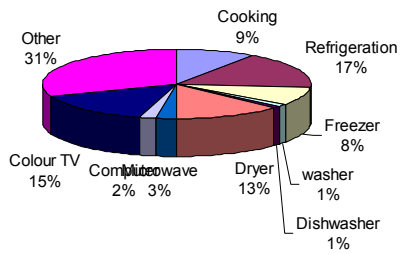


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Water Use



Appliance energy



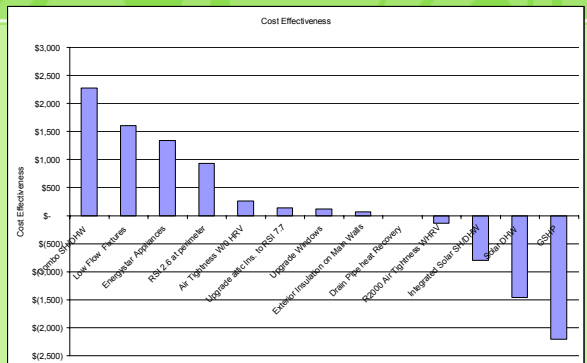
Customer Side Alternative Energy

- Electric
 - Photovoltaic (PV)
 - Wind
 - Micro Hydro
- Thermal
 - Solar
 - Biomass

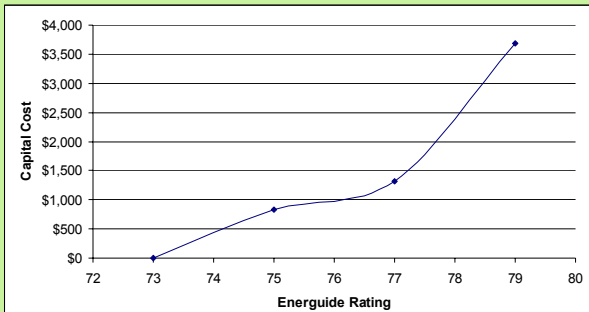
Emerging Technologies

- Zero Energy House
 - Advanced building envelopes
 - airtight envelope
 - advanced glazing;
- Passive or active control of solar energy
- High efficiency light sources
- Lighting controls
- On site renewables
- High efficiency appliances
- Customer-side controls and smart appliances

Analysis of Upgrades



Incremental Cost of improving Performance



BC Provincial Energy Targets

SECTOR	TARGET
New single family and row houses	EnerGuide 80 by 2010, (32% savings in energy use)
New multi-unit residential and commercial buildings	25% better than the MNECB by 2010, reducing average energy consumption by 37%

Break Out Groups

- Building Energy Efficiency Upgrades
 - E.g. windows, insulation, etc.
- Energy Efficient Technologies
 - E.g. Energy Star appliances, ground-source heat pumps, etc.

Renewable Energy Sources

Provincial Energy Plan - Objectives

- Net zero GHG emissions (new generating facilities)
- Target: 50% of incremental resource needs through conservation by 2020
- 5% renewable fuel target by 2010
- Rate design to encourage conservation, energy efficiency and development of renewable energy

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How do we want to get there? Supply Options

- Diesel
- Biomass
- Wind
- Hydro (storage and run-of-river)
- Tidal
- Ground source heat (to replace electric heat)
- Others?

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Break Out Group - Discussions

- Building Scale Systems
 - E.g. building integrated PV
- Community / Island Scale Systems
 - E.g. wind turbines

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Next steps

- Create bundles (DSM and supply) based on input
- Decision Analysis on Bundles (with the Working Group)
- Public Meetings in late June
- Develop implementation strategy

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