

Ktunaxa Nation Community Energy Plan



**DRAFT REVIEW
WORKSHOP
FEBRUARY 5, 2010**

think *Bright*
climate solutions

Workshop Objectives



- **Present Ktunaxa Nation Energy Profile;**
- **Review and refine draft CEP outline;**
 - **including implementation strategies and targets**
- **Approve Draft CEP Outline**

Some Questions for the Day



- Do the strategies and policies make sense for your community?
- What are your priorities for action; \$; effort?
- How should MEMPR funds be spent?
- Should the targets be changed?

Workshop Outline



- Overview of processes to date
- Present findings of CEP process:
 - Nation Energy & GHG Profile
- Review and refine targets and strategies in the following areas:

Residential Buildings	Commercial Buildings
Management and Policy	Alternative Energy
Transportation	Waste
GHG Reduction	Education & Outreach
Climate Change Adaptation	

Past Energy and GHG Processes



- **Ktunaxa Nation Energy Efficiency Toolkit (08)**
- **EnerGuide audits (09-10)**
- **Carbon Neutral Kootenay (09-10)**
 - *Corporate energy profile and planning template*
- **CBT Communities Adapting to Climate Change (ongoing)**
- **KNC Community Energy Plan**
 - *Community energy profile and plan*

Energy Commitments



- **New Civic & Commercial Buildings**
 - 25% better than Model National Energy Code
- **Existing Civic & Commercial Buildings**
 - Reduce energy consumption by 15%;
- **New Residential Buildings**
 - EnerGuide rating of 80 for all new construction;
- **Alternative Energy**
 - Generate 10% of energy from community-based, clean energy resources
- **Greenhouse Gas (GHG) Reduction**
 - Provincial Target of 33% GHG ↓ by 2020

Developing a Community Energy Plan



- **Data Gathering:**
 - Baseline energy consumption (utilities) and GHG profile
- **Workshops and Surveys**
 - Understanding primary heating source; community transportation; and waste collection
- **Site Visits**
 - Alternative energy assessment and commercial & civic buildings
- **Strategies and Viable Targets**
- **Training**

KNC and Band Energy and GHG Profiles



ENERGY CONSUMPTION

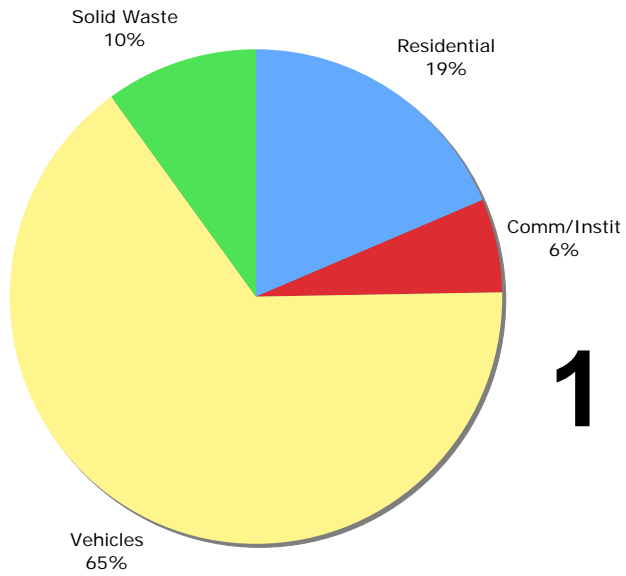
GREENHOUSE GAS EMISSIONS

What is an inventory?

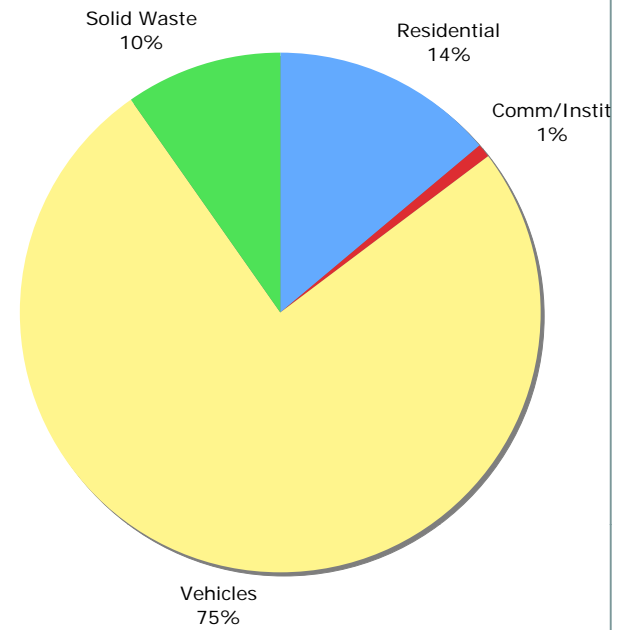


- Accounting of energy consumption, GHG emissions
- Community-wide emissions
- Homes, buildings, transportation
- Electricity, gas, propane, oil, gasoline
- Wood
- Solid waste
- Forecast of future emissions

Which Band?

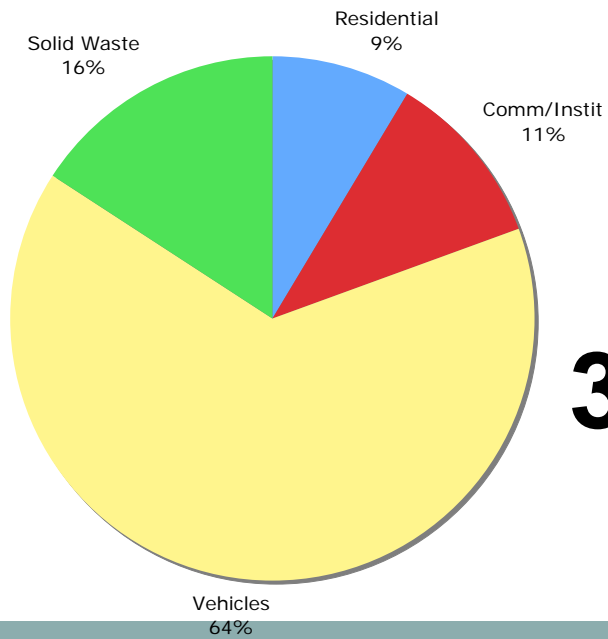


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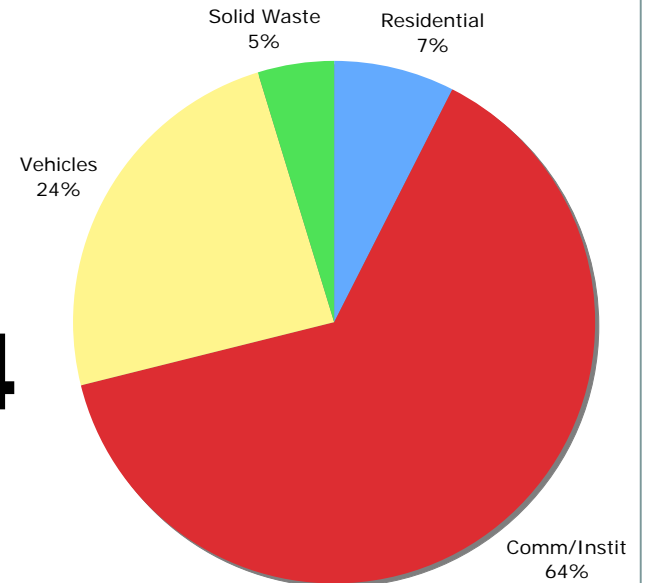


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- Residential
- Comm/Instit
- Vehicles
- Solid Waste

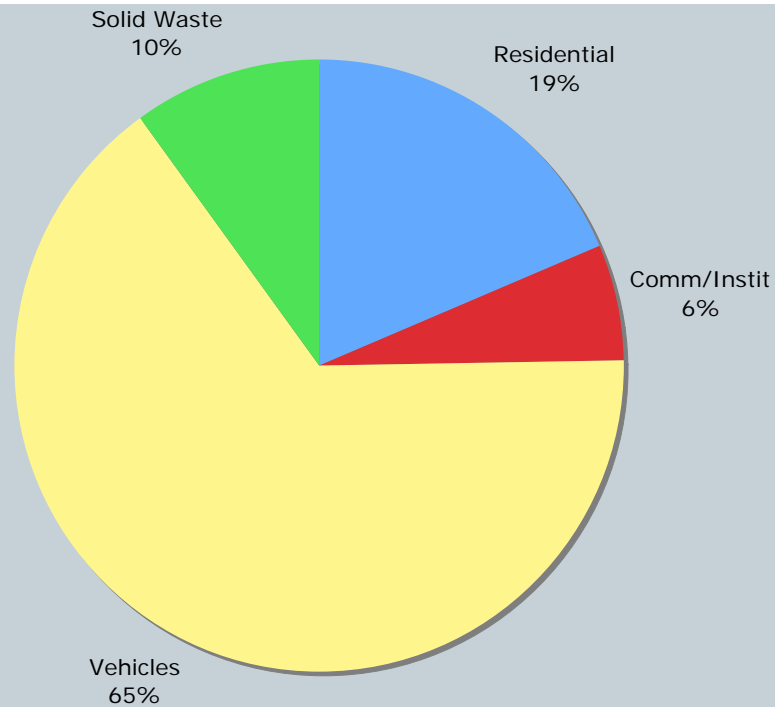


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Akisqnuk Band



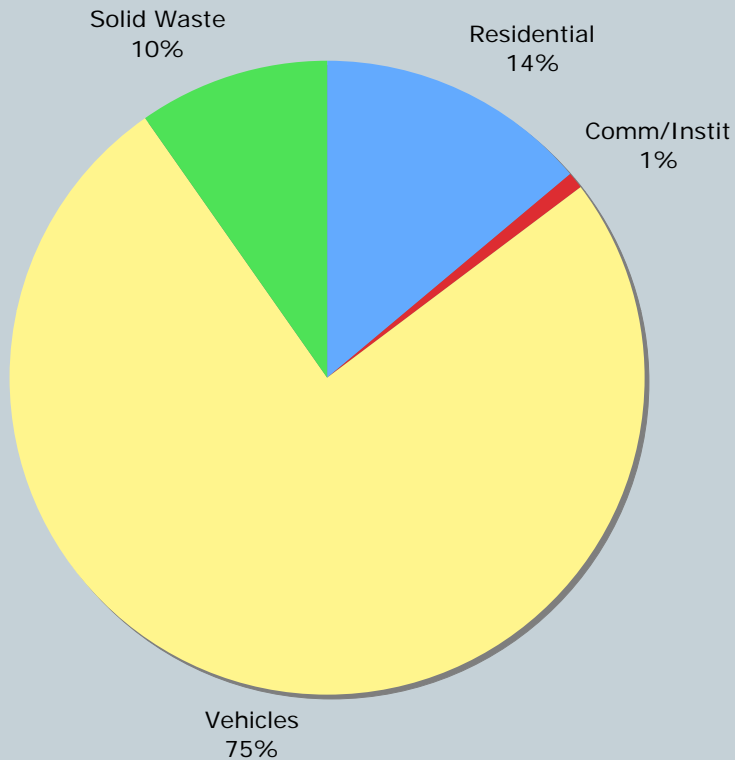
2008: 12584 GJ, 496 t CO₂e

Forecast 1.2% ↗ per year :

2020: 572 t CO₂e

2050: 818 t CO₂e

Lower Kootenay Band



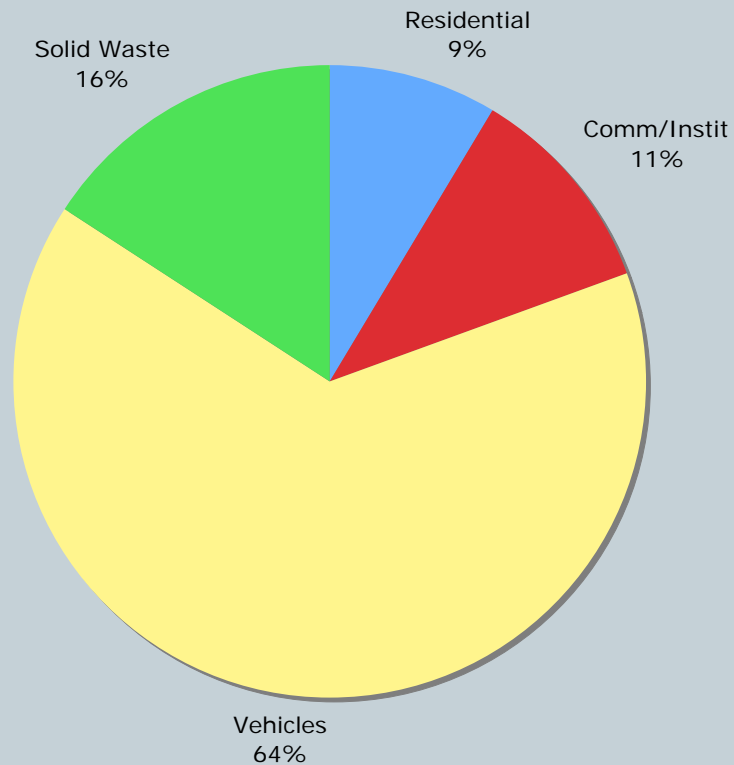
2008: 10,405 GJ, 328 t CO₂e

Forecast 1.2% ↗ per year :

2020: 378 t CO₂e

2050: 541 t CO₂e

Tobacco Plains Band



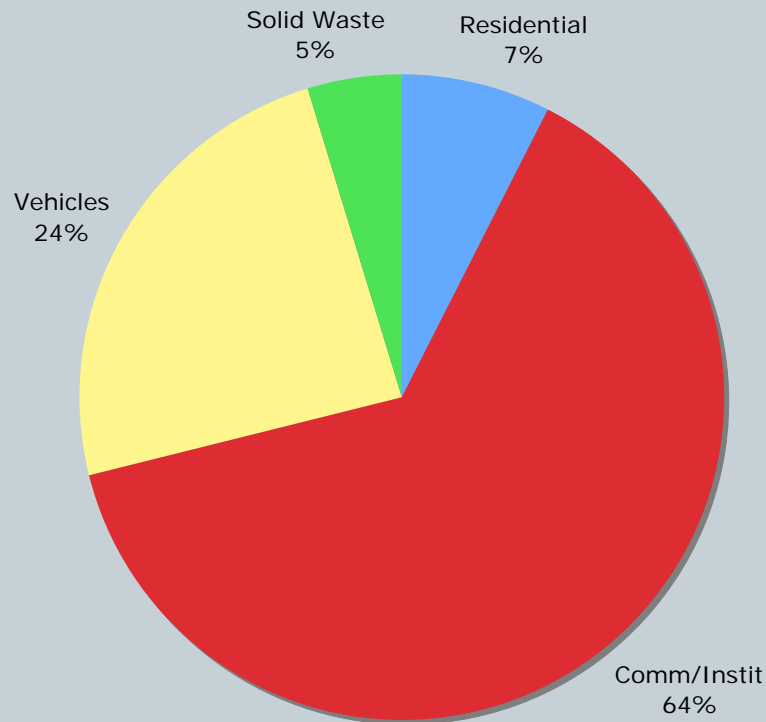
2008: 6075 GJ, 221 t CO₂e

Forecast 1.2% ↗ per year :

2020: 256 t CO₂e

2050: 365 t CO₂e

St. Mary's Band



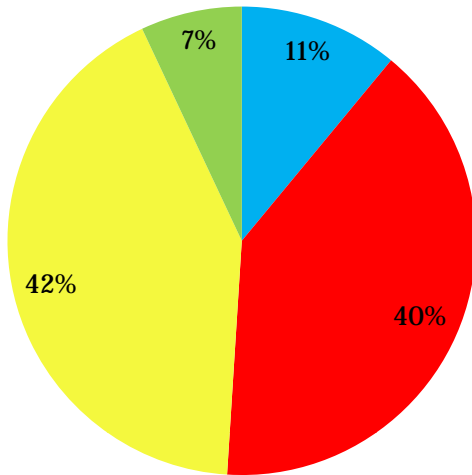
2008: 42,893 GJ, 1516 t CO₂e

Forecast **0.63%** ↗ per year :

2020: 1,628 t CO₂e

2050: 1,976 t CO₂e

KNC GHG Emissions

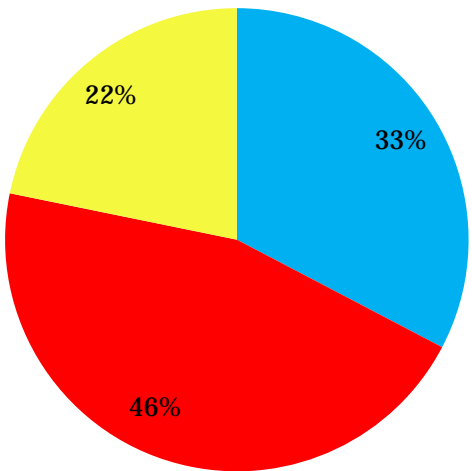


- Residential Buildings
- Comm/Instit.
- Vehicles
- Solid Waste

2008: 71,957 GJ,
2561 t CO₂e

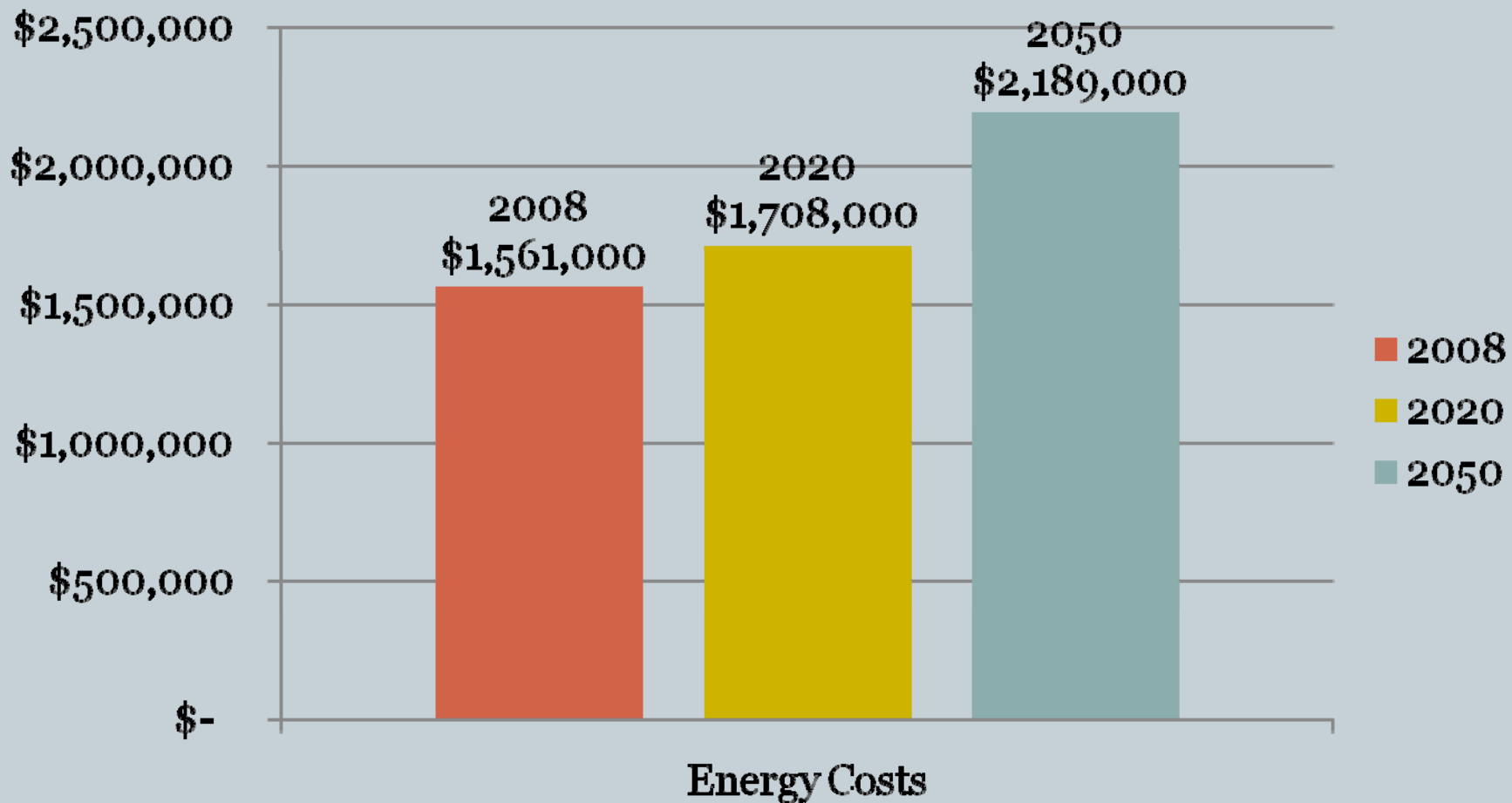
Forecast: **0.88%** ↗ /year
2020: 2,834 t CO₂e
2050: 3,700 t CO₂e

KNC Energy Consumption



- Residential Buildings
- Comm/Instit.
- Vehicles

The Cost of Energy



Strategies, Results, and Targets

- **Original Target**
- **Proposed Target**
- **Strategies**
- **Costs/Relative Ease of Implementation**

Existing Residential Buildings...



- **Original Target:**
 - None
- **Proposed Target:**
 - 15% reduction in residential energy consumption from 2008 levels by Dec. 2010

...Existing Residential Buildings



- **Proposed Strategies:**

- WETT & Certified EcoEnergy Auditor Training
- Create a 1/2 time position: installation/assessment
- Assess all homes for basic and acute retrofits by Dec. 2010
- **2011 +:** KNC Energy Inspector/Maintenance position (est. 1/4 to 1/2 time)
- May include a Building Inspector position

- **Implementation:**

- \$25,000 labour (2010)
- \$50,000 basic retrofit packages (approx. \$300/home)
- \$45,000 training, acute upgrades, technical support
- Total: \$120,000
- Recommend partial cost recovery

New Residential Buildings...



- **Original Target:**

- All new homes within the Ktunaxa Nation will meet a minimum *EnerGuide for New Houses* rating of 80, reducing the average energy consumption by 32%

- **Proposed Target:**

- As of April 1st, 2010, all new residential construction will meet, *at minimum*, the current BC Building code as well as the 2010 CEP residential building guidelines.

...New Residential Buildings



- **Proposed Strategies**

- KNC and all member bands adopt and apply the CEP *Residential* Building Design Guidelines and Checklist as policy for all new residential buildings of April 1st, 2010.

- Develop contract language re: green building commitment and verification

- **Implementation:**

- Nominal additional building costs, offset by energy savings paybacks; Easy to Implement

Existing Institutional/Commercial Buildings...



- **Original Target:**
 - Achieve a 15% energy reduction in all existing Civic Buildings
- **Proposed Target**
 - All institutional and commercial buildings will achieve a minimum 15% energy savings over 2008 levels by 2012.

...Existing Commercial/Institutional Buildings



- **Proposed Strategies:**

- Implement priority retrofits for all existing Nation and Band Buildings
- Undertake a comprehensive energy Study at SEM
- Implement comprehensive energy upgrade at SEM
- KNC position annual inspection/tune-up

- **Implementation:**

- KNC/Band bldgs.: \$166,000 (Tool Kit)
- SEM: gross estimate: \$250,000
- Easy to Implement

New Institutional/Commercial Buildings...



- **Original Target:**
 - Achieve and energy performance of 25% better than the Model National Energy Code of 100% of new civic (or Council) buildings
- **Proposed Target:**
 - As of April 1st, 2010, all *new* institutional and commercial construction will meet, *at minimum*, the current BC Building code as well as the 2010 CEP Commercial Building Guidelines.

...New Institutional and Commercial Buildings



- **Proposed Strategies:**

- Adopt and apply the CEP *Commercial* Building Design Guidelines and Checklist as policy for all new commercial and institutional buildings as of April 1st 2010.

- Develop contract language re: green building commitment and verification

- **Implementation:**

- Nominal additional building costs, offset by energy savings paybacks; Easy to Implement

Management and Implementation



- **Training and Capacity Building**
 - WETT Inspector Training (wood heating)
 - EcoEnergy Auditor Training
- **1/4 to 1/2 time Position**
- **Contract language development**
- **KNC Energy Team**

Alternative Energy...



- **Original Target:**
 - Generate 10% of energy needs from community-based, clean energy resources, or renewable heating systems and fuels (e.g. bioenergy).

- **Proposed Target:**
 - Meet target by 2012

Summary Table – Viability of Renewable Energy

	Key factors for success	Akisqnuk	Lower Kootenay	St. Mary's	Tobacco Plains
Solar Thermal	<ul style="list-style-type: none"> - Sun hours - South facing - Open, no shading 	Fair	Poor	Fair	Fair
Solar Photovoltaics	<ul style="list-style-type: none"> - Sun hours - South facing - Open, no shading - Distance to power 	Poor	Poor	Poor	Poor
Passive Solar	<ul style="list-style-type: none"> - Sun hours - South facing - Open, no shading 	Good	Fair	Good	Good
Wind	<ul style="list-style-type: none"> - Steady winds 	Poor	Poor	Poor	Fair
Micro-hydro	<ul style="list-style-type: none"> - Water flows - Elevation drop 	Poor	Poor	Poor	Poor
Biomass	<ul style="list-style-type: none"> - Availability of biomass - Distance from source - Security of supply 	Poor	Fair	Poor	Poor
Geothermal	<ul style="list-style-type: none"> - Available hot springs 	Poor	Poor	Poor	Poor
Geo-exchange	<ul style="list-style-type: none"> - Groundwater availability - Available open land - Soil type 	Good	Fair	Good	Fair

...Alternative Energy



- **Potential results:**
 - Solar for SEM pool about 2-3% of KNC energy
 - Ground Source Heat Pump in SEM about 6-8% of KNC energy
 - Passive Solar design in new homes: approx. 10-15% per home
 - Solar water heating : 10% per home

Transportation...



- **Original Target:**
 - Achieve a 15% reduction in energy consumption for existing *civic* fleets
- **Proposed Target:**
 - Achieve a 15% reduction in travel related GHG emissions by 2012

...Transportation



- **Strategies:**
 - Idle Free Policy
 - Mandatory driver training for all KNC and Band staff; optional for band members
 - Investigate development of community shuttle bus services
 - KNC Community Ride Share board and web service
 - Public awareness campaign (Idling, cycling etc...)
- **Implementation:**
 - Nominal cost; primarily education focused

Waste...



- **Original Target:**
 - None
- **Proposed Target**
 - 20% reduction in solid waste by 2012

...Waste

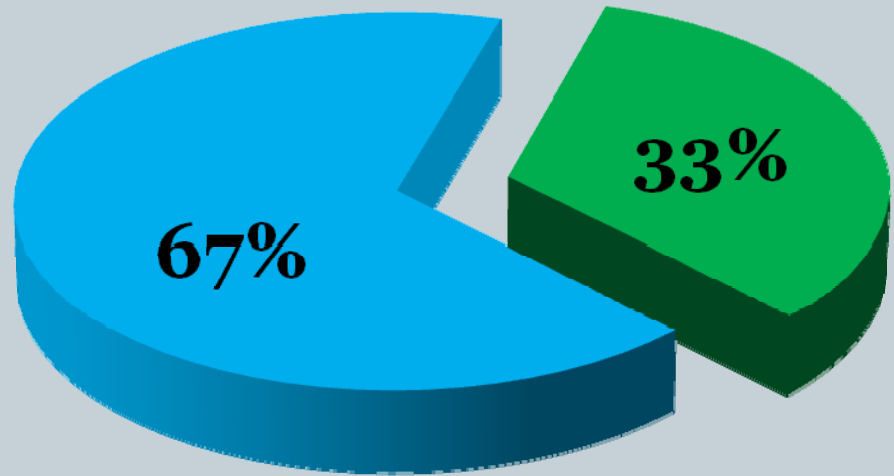
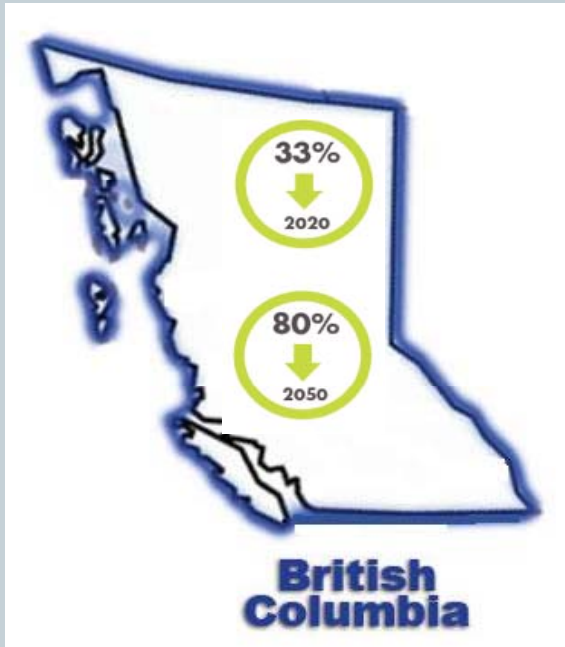


- **Strategies:**
 - Local recycling transfer stations
 - RDEK blue box partnership
 - Public awareness campaign
- **Implementation:**
 - ??

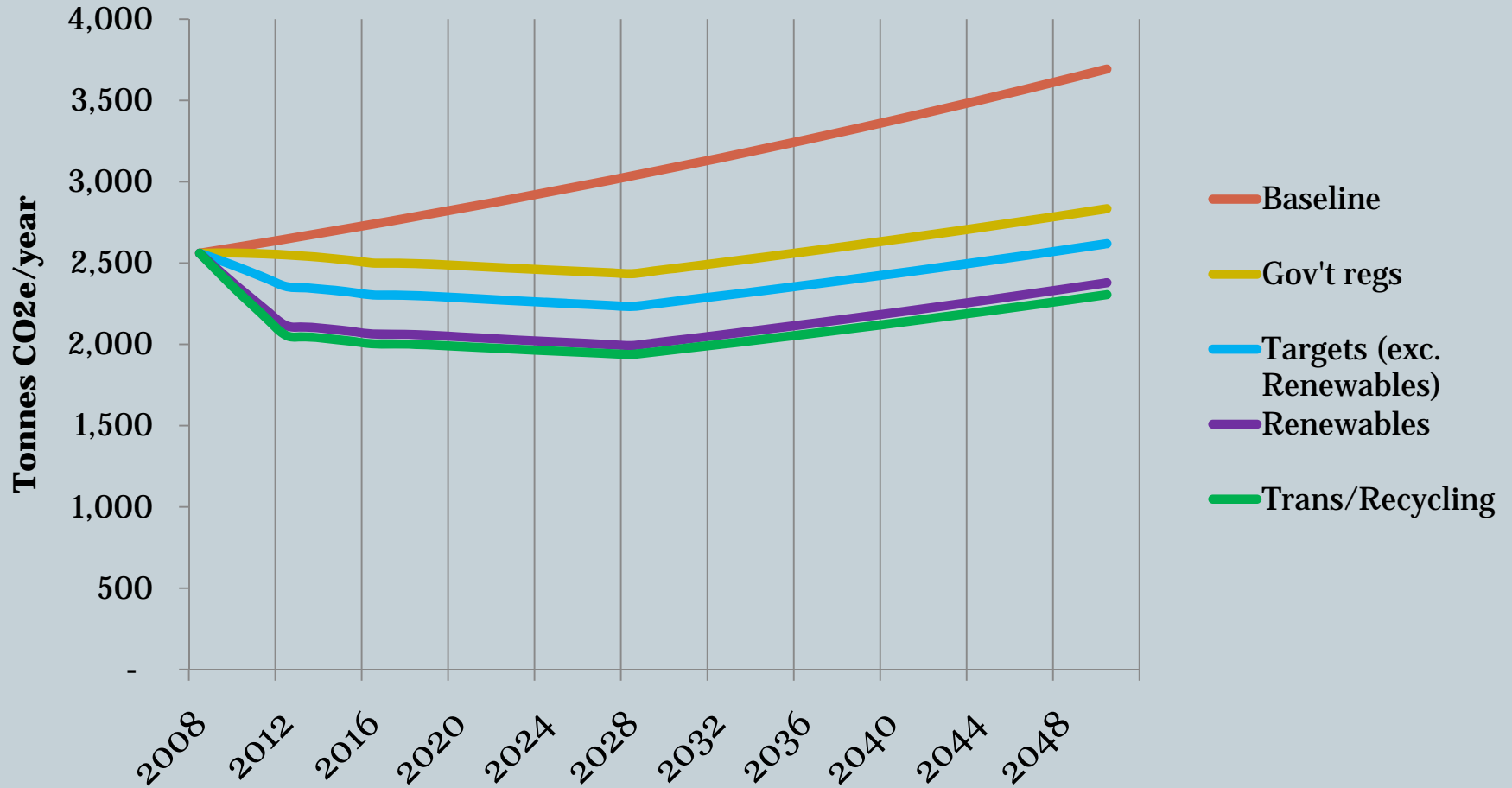
Community –Wide GHG Reduction



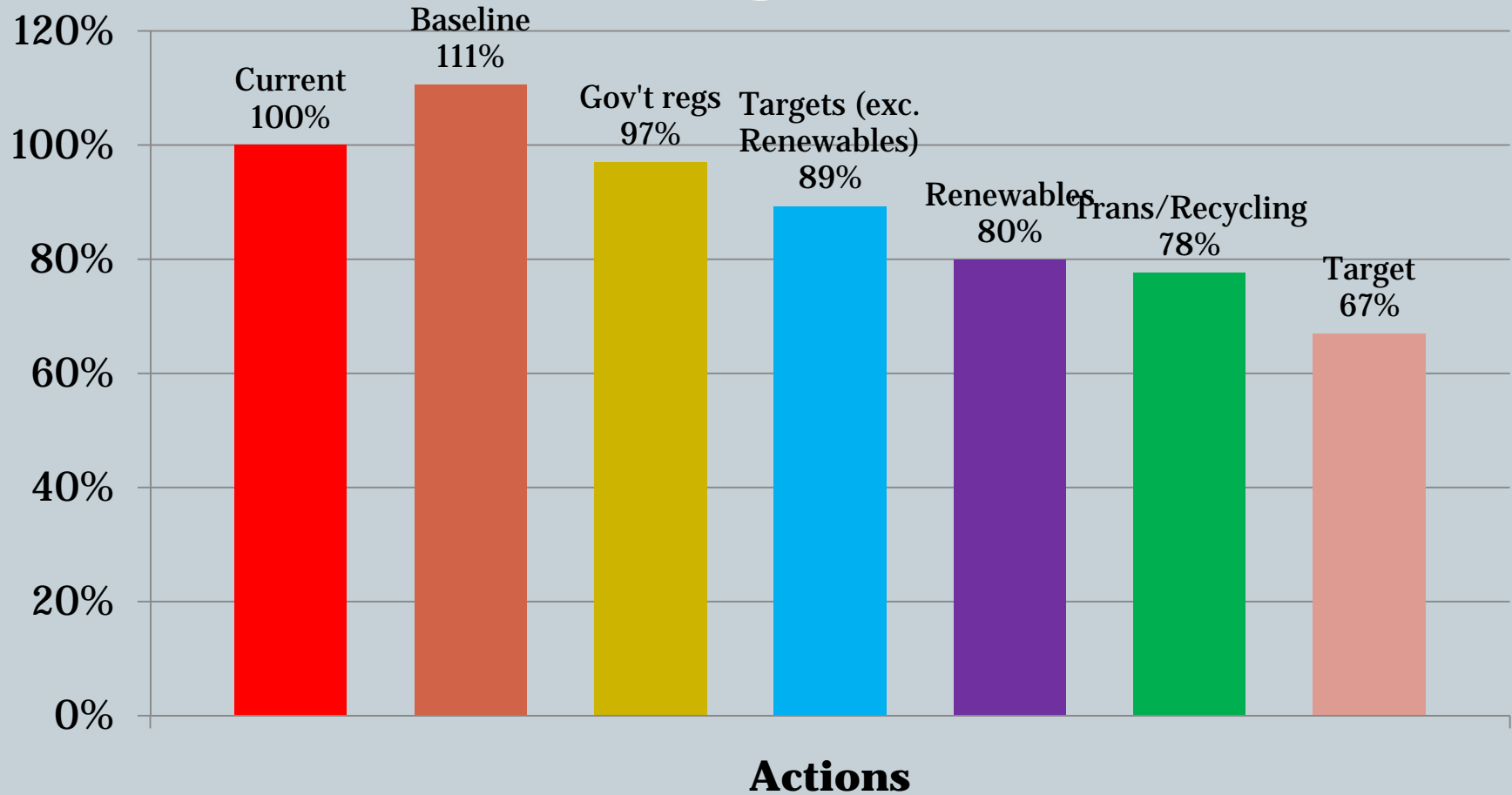
Current Target – 33% Reduction by 2020



Overall GHG Emissions Forecast



GHG Emissions in 2020



Revised Target?



Why Climate Change Adaptation?



- **Global**
 - Collective response to reduce overall climate impacts
- **Local**
 - Know the projected 'damage report'
 - Take steps to minimize vulnerability
 - Build community resilience against risks

Climate Change Adaptation...



- **Original Target:**

- None

- **Proposed Target:**

- To improve the resilience of the Ktunaxa Nation to climate change related risks:

- ✦ Identify vulnerable habitats (traditional fishing and hunting)
- ✦ Plan for annual run-off changes (water supply, ecosystem effects)
- ✦ Extreme weather (fire/flood/drought)
- ✦ Diversify economic development (resource sector impacts)
- ✦ Emergency planning/socioeconomic

...Climate Change Adaptation



- **Strategies:**
 - CBT Communities Adapting to Climate Change participation (Band and Nation staff and Council)
 - Learning network participation (KNC Energy Team?)
 - Local Case Study review (Elkford, Kimberley, Invermere)
 - RDEK /municipal Partnership: emergency planning
 - Climate Change Risk Assessment and Adaptation Plan

Education and Outreach



- **Original Target;**
 - None
- **Proposed Strategies:**
 - KNC Energy Manager position includes outreach role
 - Mitigation and Adaptation education
 - Ktunaxa focused approach and objectives

Management and Implementation



- **Annual Monitoring and Reporting:**
 - Energy Consumption, Travel, Waste, and GHG emissions
- **KNC Energy Team**
 - 1 person per Band + KNC Energy Manager
 - Hiring , Training, Funding, contracts etc...
- **Adaptation Planning**

Contact Info



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