



Freedom To Create. Spirit To Achieve.

Alternative and Renewable Energy Overview

**ACCA Rise and Shine Event
October 15, 2009**

**Alberta Energy
Electricity and Alternative Energy
Division**

**Government
of Alberta**

AGENDA

- Welcome and Introductions
- Definitions
- Resource Potential
- Current State of Development
- Policy Context
- Bioenergy Programs
- Other A&R Energy Policy Activities

Alternative and Renewable Energy Defining the Resource

Definitions (informal)

Renewable energy:

An energy resource which can be replenished by natural processes within the average human lifespan

Alternative energy:

- “Greener” energy than the status quo
- Not a major part of today’s energy mix
- Not relying on fossil fuels, **and/or**
- A conventional resource used differently

A&R Energy Examples

Energy type	Alternative	Renewable	Energy Conservation
Wind	?	X	
Solar	X	X	
Geothermal	X	X	
Hydro	Small scale	X	
Bio-energy	X	X	
Fuel cells	X	?	
Hybrid vehicles	Partially		X
Waste heat recovery	X	Sometimes	X
Cogeneration	X	Sometimes	X

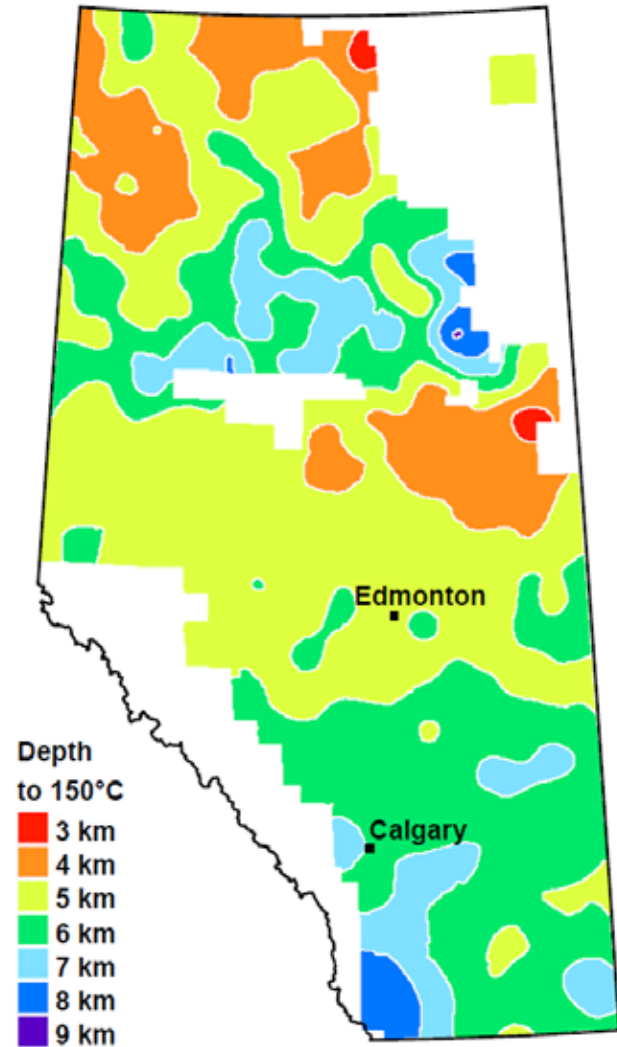
Resource Potential

Alberta

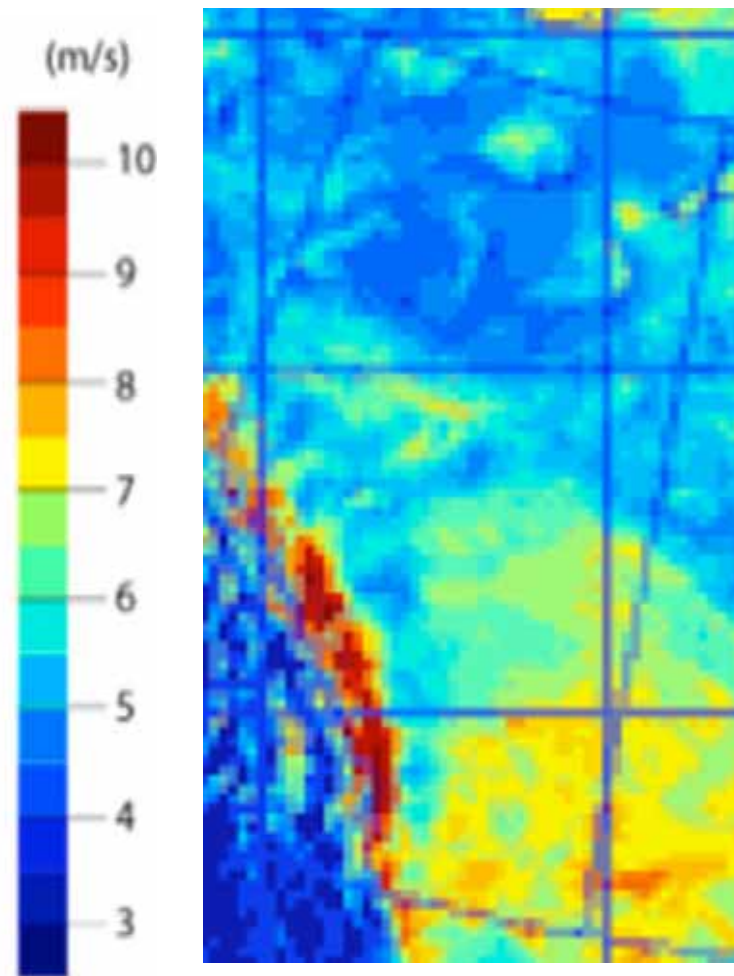
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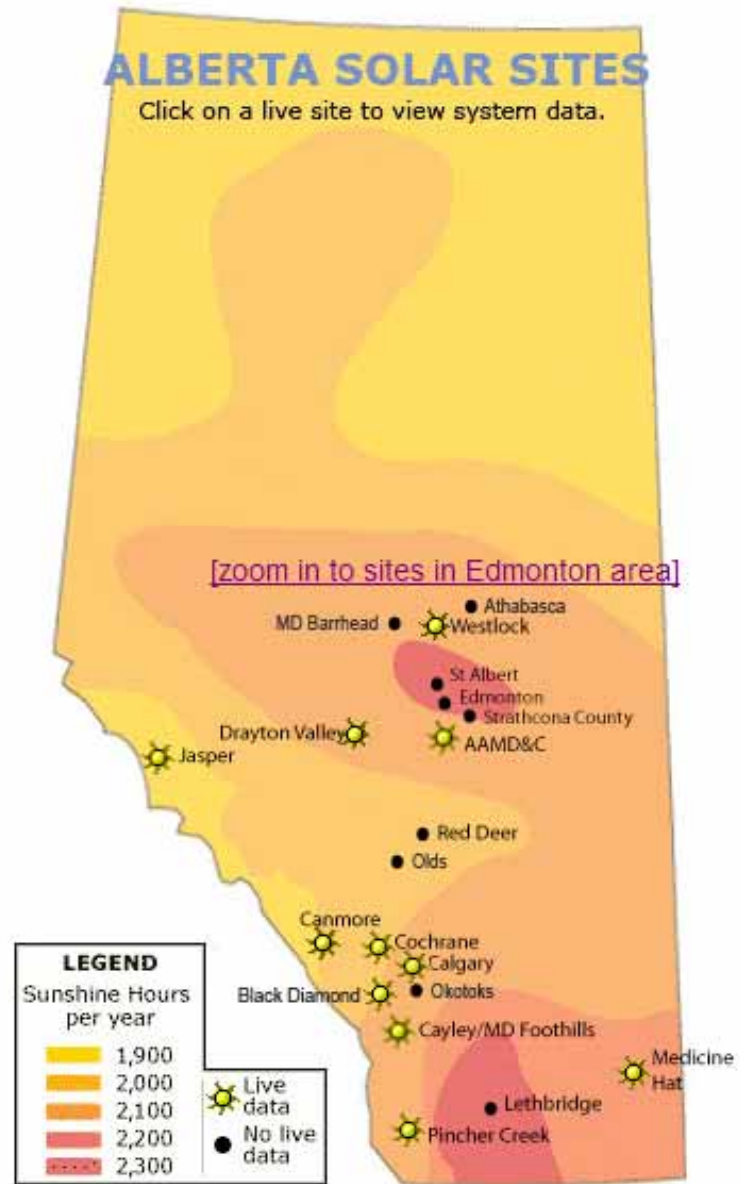
Geothermal Potential



Wind Resource Potential



Solar Resource Potential



Bioenergy

Agriculture - Crops

Oilseed and starch crops
Straw and other waste
Non-food crops

Forestry

Fast growing species
Non-merchantable residue
Processing waste

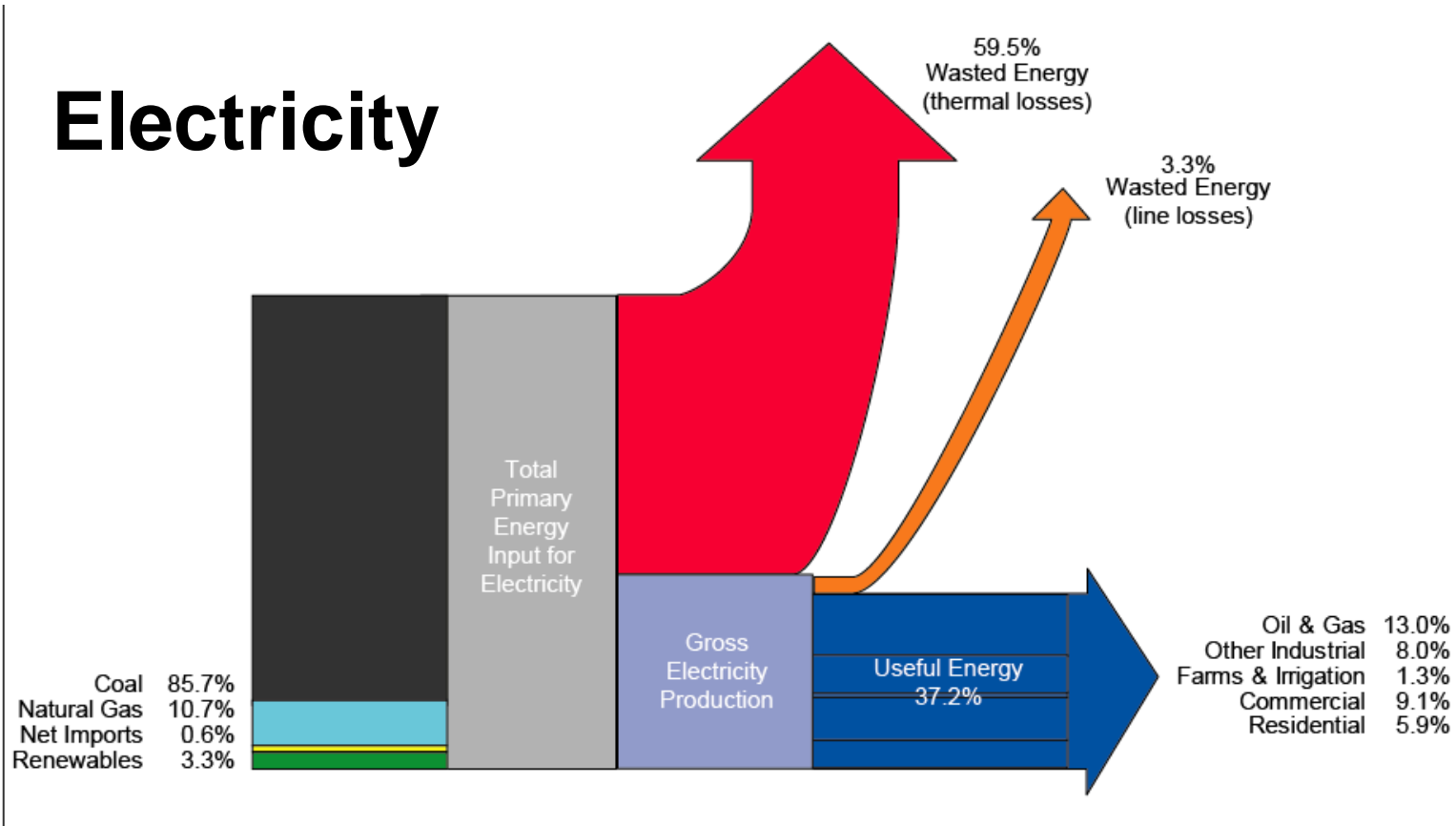
Agriculture Animal co-products

Manure
Animal processing waste

Municipal and commercial waste

Municipal solid waste
Biosolids
Commercial and industrial waste

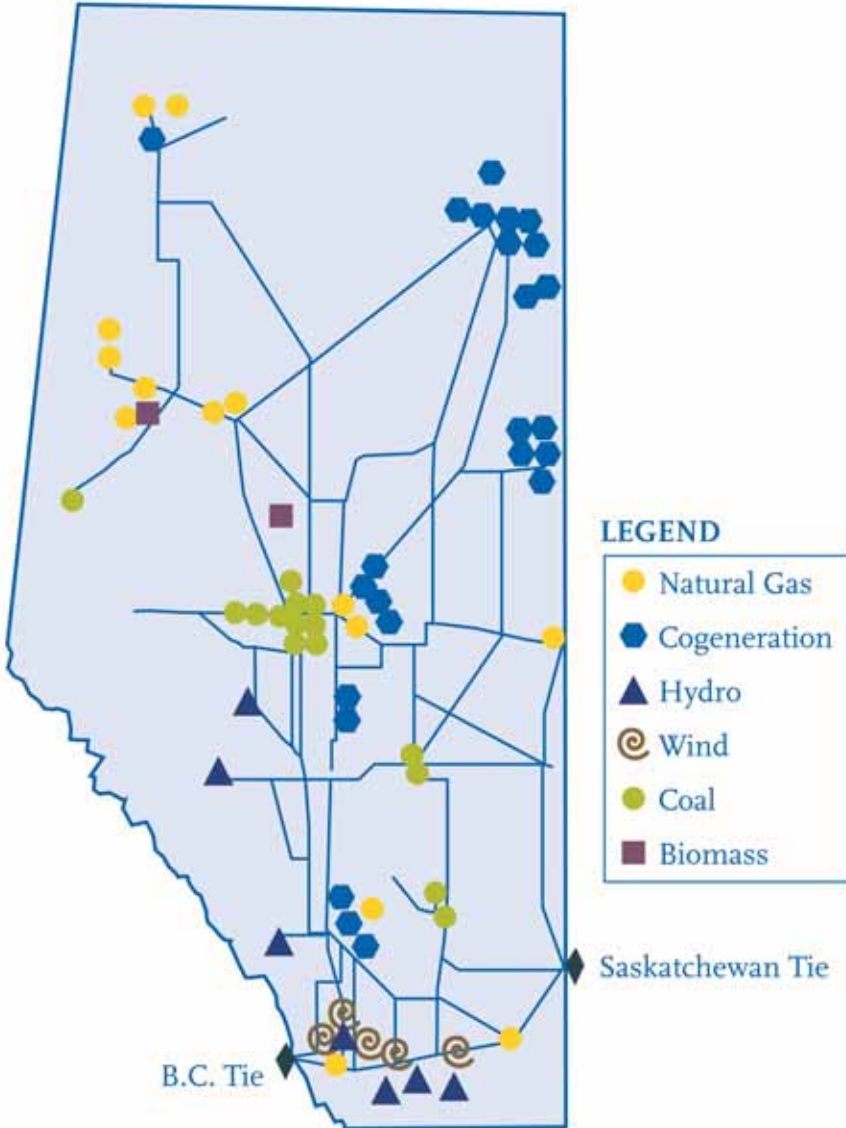
Waste Energy Potential



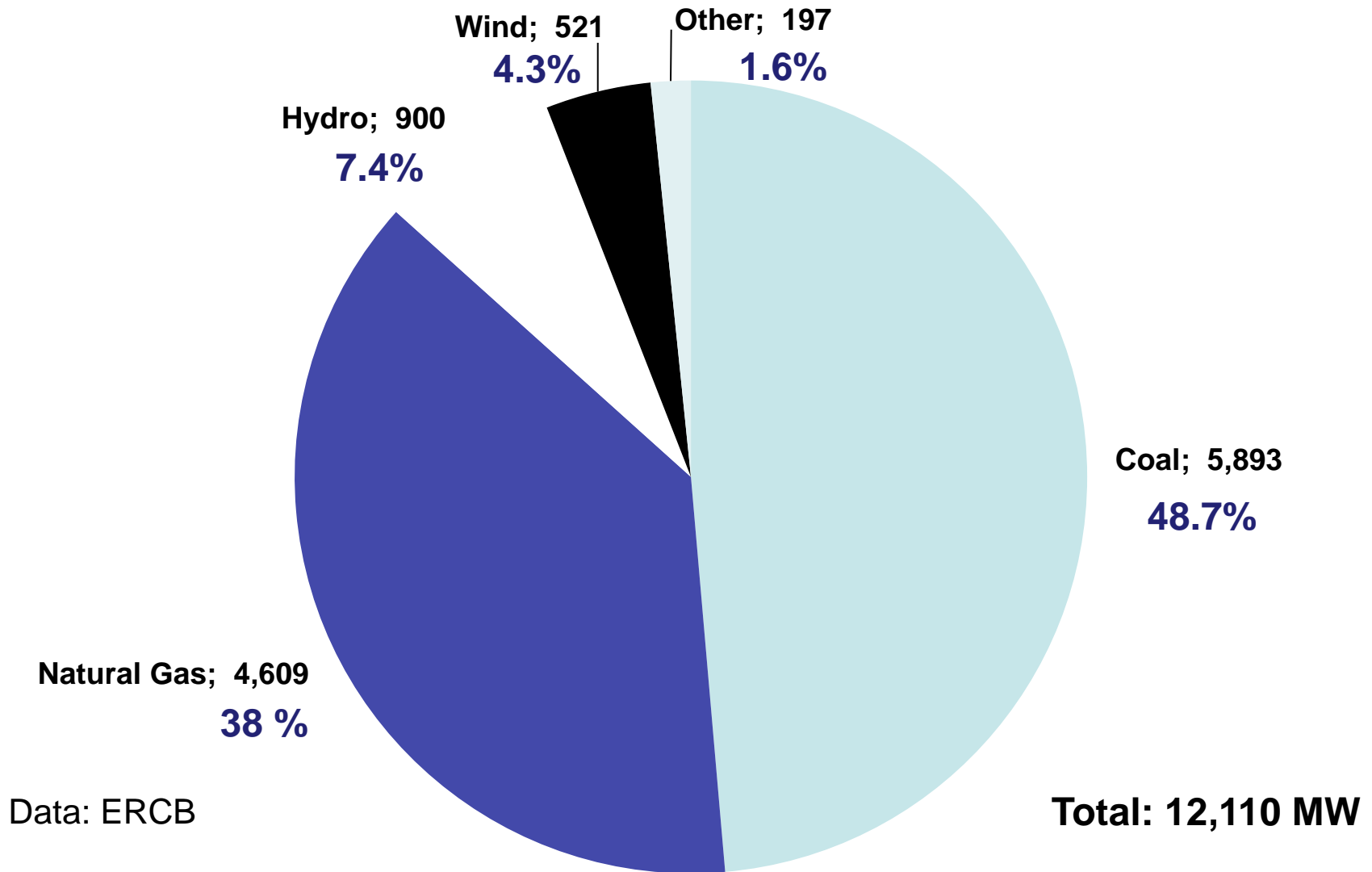
Current State of Development

Alberta's Electricity Grid Today

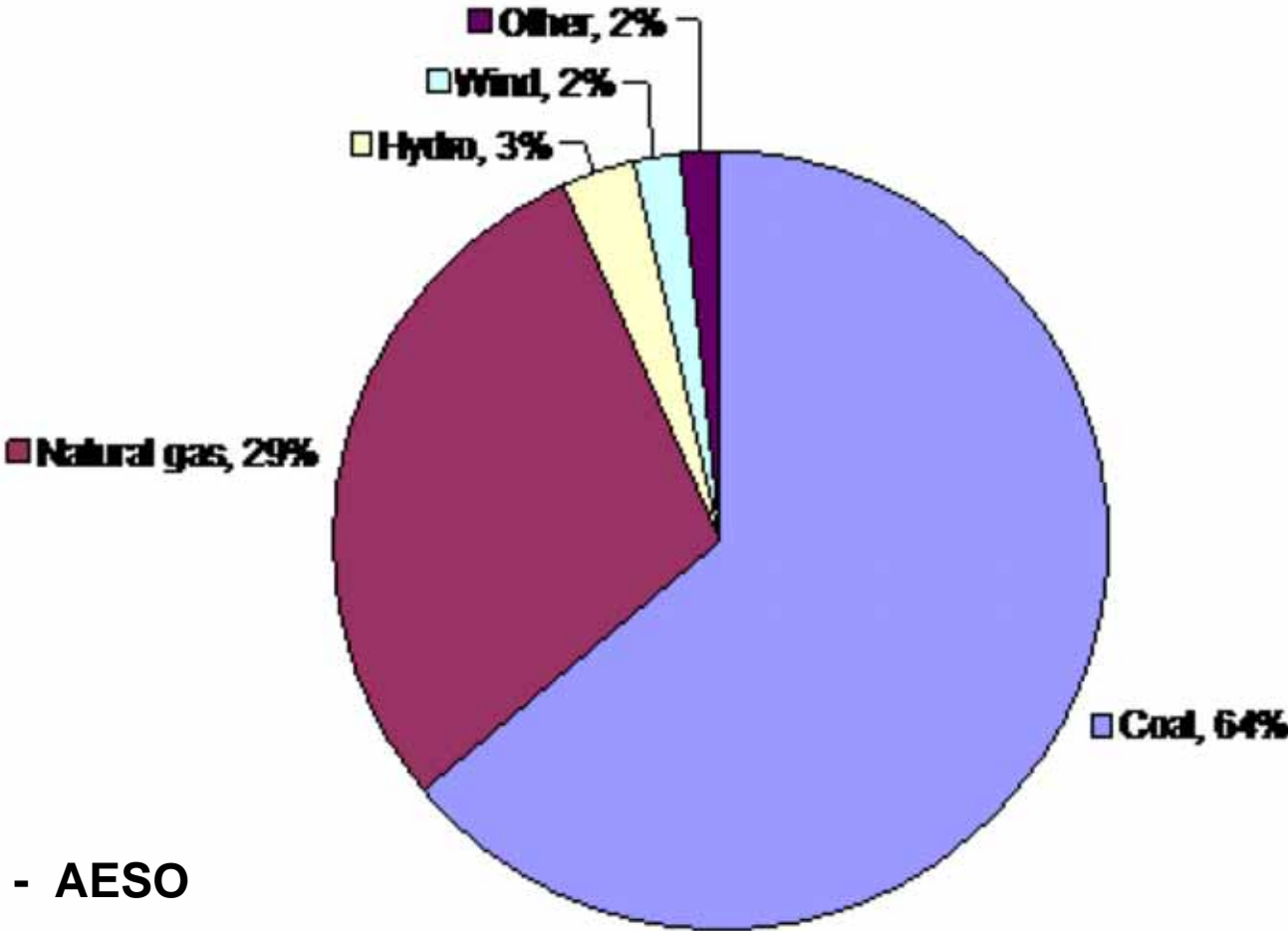
Provincial Energy Strategy, 2008



Alberta's Installed Electricity Generation Capacity (MW) - 2008



Actual Generation in Alberta by Source



2008 - AESO

Biofuel Production Capacity

Biofuel	2008 Capacity Millions of litres	Producer
Ethanol	40	Permolex
Biodiesel	19	Western Biodiesel

Policy Context

Provincial Energy Strategy (2008)

Strategic objectives supported by energy conservation and efficiency and alternative and renewable energy

- **Reduce Alberta's carbon footprint**
 - Wise energy use
 - Reduce reliance on fossil fuels
- **Sustainable economic development**
 - Diversify Alberta's energy portfolio
 - Create value added opportunities
 - Create economic self sufficiency

Climate Change Strategy (2008)

- **Conserve and use energy efficiently**
- **Green energy production**
- Implement carbon capture and storage

Targets

- By 2020 -- 50 megatonne reduction
- By 2050 -- 200 megatonne reduction

Nine-Point Bioenergy Plan (2006)

- Biorefining Commercialization Program
- Bioenergy Infrastructure Program
- Bioenergy Producer Credit Program
- Renewable Fuel Standard
- Micro-Generation Policy
- Bio-Industrial Cluster Development
- Bioenergy Investment Instruments
- SRM Disposal Protocol
- Existing programs target Bioenergy

Related Strategies and Policies

Environment

- Clean Air Strategy
- Specified Gas Emitters Regulation/Carbon Offsets
- Too Good To Waste
- CASA Recommendations (Clean Air Strategic Alliance)
- Water for Life
- Energy Efficiency Policy Framework (pending)

Energy - Electricity

- Transmission Infrastructure – Bill 50 (2009)
- Co-generation policy

Related Strategies and Policies

Forestry

- Forest Industry Competitiveness and Sustainability (SRD)

Agriculture

- Growing Forward - Canada/Alberta Agriculture

Research

- Alberta Innovates (AET)
- Alberta Biomaterials Development Centre (ARD/AET)
- Alberta Bioconversion Network (Alberta/industry/academic)

Land Use

- Land Use Framework (SRD)

Alberta's Bioenergy Programs

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Bioenergy Grant Programs

\$239 Million April 2007 – March 2011

- Biorefining, Commercialization and Market Development Program (BCMDP) – *capacity*
- Bioenergy and Infrastructure Development Program (BIDP) – *capacity*
- Bioenergy Producer Credit Program (BPCP) – *market*

Bioenergy Projects

- Bio-electricity, biofuel and biogas
- Forest and agricultural biomass
- 70 projects have received BCMDP/BIDP grant funding
- \$117 Million
- Program ends March 2011



Bioenergy Producer Credit Program

Biofuel

- \$0.14/litre up to 150 million litre capacity
- \$0.09/litre over 150 million litre capacity

Bioelectricity

- \$0.06/KWh for capacity up to 3 MW
 - \$0.02/KWh for capacity over 3 MW
-
- Program expires March 2011

Producer Credit Recipients

Biofuels

- 1 ethanol (Permolex, Red Deer)
- 1 biodiesel (Western Biodiesel, Aldersyde)

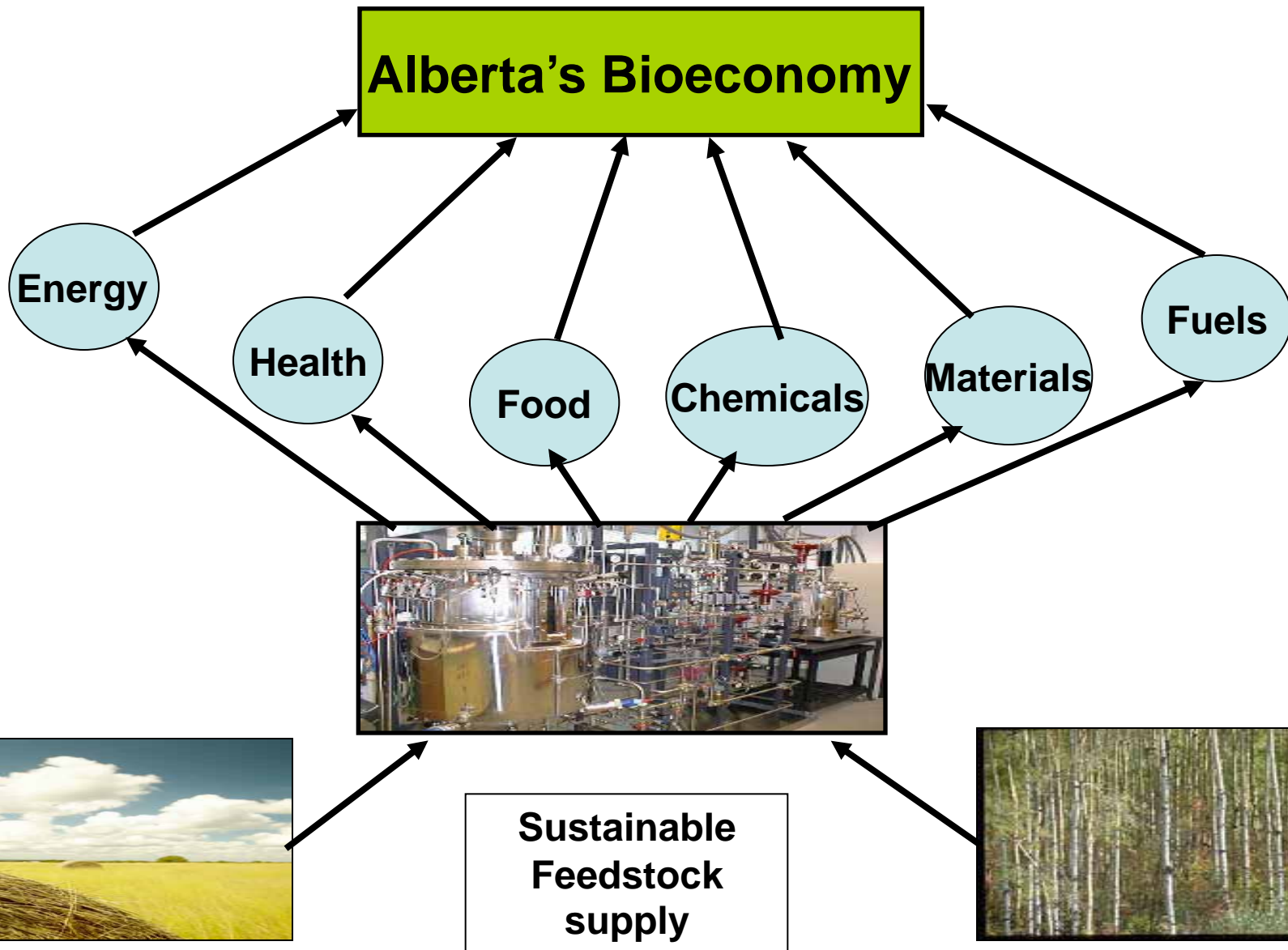
Bioelectricity

- 1 biogas (Highmark GPHH, Vegreville)
- 1 gasification (Dapp)

Renewable Fuels Standard (Alberta)

Starting 2010

- 2% biodiesel in diesel fuel, annual average blend
- 5% renewable ethanol in gasoline fuel, annual average blend
- Qualifying renewable fuel must show 25 % fewer GHG emissions than equivalent fossil fuel



Other A&R Energy Policy Activities

Micro-Generation Regulation

- Non-commercial generation up to 1 MW
- Intended to meet all or portion of customer's need
- Renewable, environmentally energy sources
- Distributor pays for meter change

January 2009: 41 installations – 149.41 KW capacity

August 2009: 94 installations – 361 KW capacity

Alternative & Renewable Policy Framework

- Stakeholder consultation getting underway
- Discussion Paper (early 2010)
 - Challengers and opportunities
 - Address CASA and other recommendations
 - Identify roles and increase collaboration across ministries
- Policy Framework and Action Plan(summer 2010)
- Distributed Generation Policy (2010)

Thank You!

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www.energy.alberta.ca
→ Bioenergy
→ Electricity