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# *Biomass Availability*

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# Alberta Climate Leadership Plan – Carbon Levy Rates

- Carbon Levy is the key tool that will help pay for a more diversified economy

## Carbon Levy Rates – Major Fuels

Type of Fuel	January 1, 2017 Rate (\$20/tonne)	January 1, 2018 Rate (\$30/tonne)
Diesel	5.35 ¢/L	8.03 ¢/L
Gasoline	4.49 ¢/L	6.73 ¢/L
Natural Gas	1.011 \$/GJ	1.517 \$/GJ
Propane	3.08 ¢/L	4.62 ¢/L

**Source:** Alberta Treasury Board and Finance

# Revenues and Reinvesting in Economy

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Over the next 5 years the program is projected to collect **\$9.6 billion**, which will be fully reinvested in Alberta's economy.

# Revenues and Reinvesting in Economy

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\$6.2 billion will be spent on diversification of our energy economy and creating jobs, including:

- \$3.4 billion for large scale renewable energy, bioenergy and technology
- \$2.2 billion for green infrastructure like transit
- \$645 million for Energy Efficiency Alberta, a new provincial agency that will support increasing energy efficiency for homes and businesses

# Revenues and Reinvesting in Economy - continue

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\$3.4 billion will provide support for households, businesses and communities adjust to the carbon price, including:

- \$2.3 billion for consumer rebates to help lower- and middle-income families
- \$865 million to pay for a cut in the small business tax rate from 3% to 2%
- \$195 million to assist coal communities, Indigenous communities and others with adjustment

# Renewable alternatives to replace AB coal



# Key things for ANY bioenergy project

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- **Biomass is a commodity**
- **Who controls the biomass?**
- **Who makes the decisions, and where?**
- **Can you get a long term contract?**

# Where biomass may come from-

## # 1 Crown forest operations

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- All crown forests in AB are under an **FMA** or other agreements – forest industries are **owners** of forest slash and timber
- You have to **deal with industry** to obtain the biomass



# Where biomass may come from-

## # 2 Private forest – woodlots

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- Over **6 million acres** of private forest in Alberta
- Supply around **2 million tonnes** of wood to the forest industry
- You have to deal with **thousands of landowners** to obtain the biomass

# Where biomass may come from-

## # 3 Landfills and waste management facilities

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- Over **170** landfills in Alberta
- You have to deal with various landfill **operators and owners** to obtain the biomass

# Where biomass may come from-

## # 4 Railway ties and rig mats

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**Railway** ties –thousands of them replaced every year - railway tie weighs around 200 lb

Millions of **rig mats** – one mat weighs around 2000 lb



# Where biomass may come from-

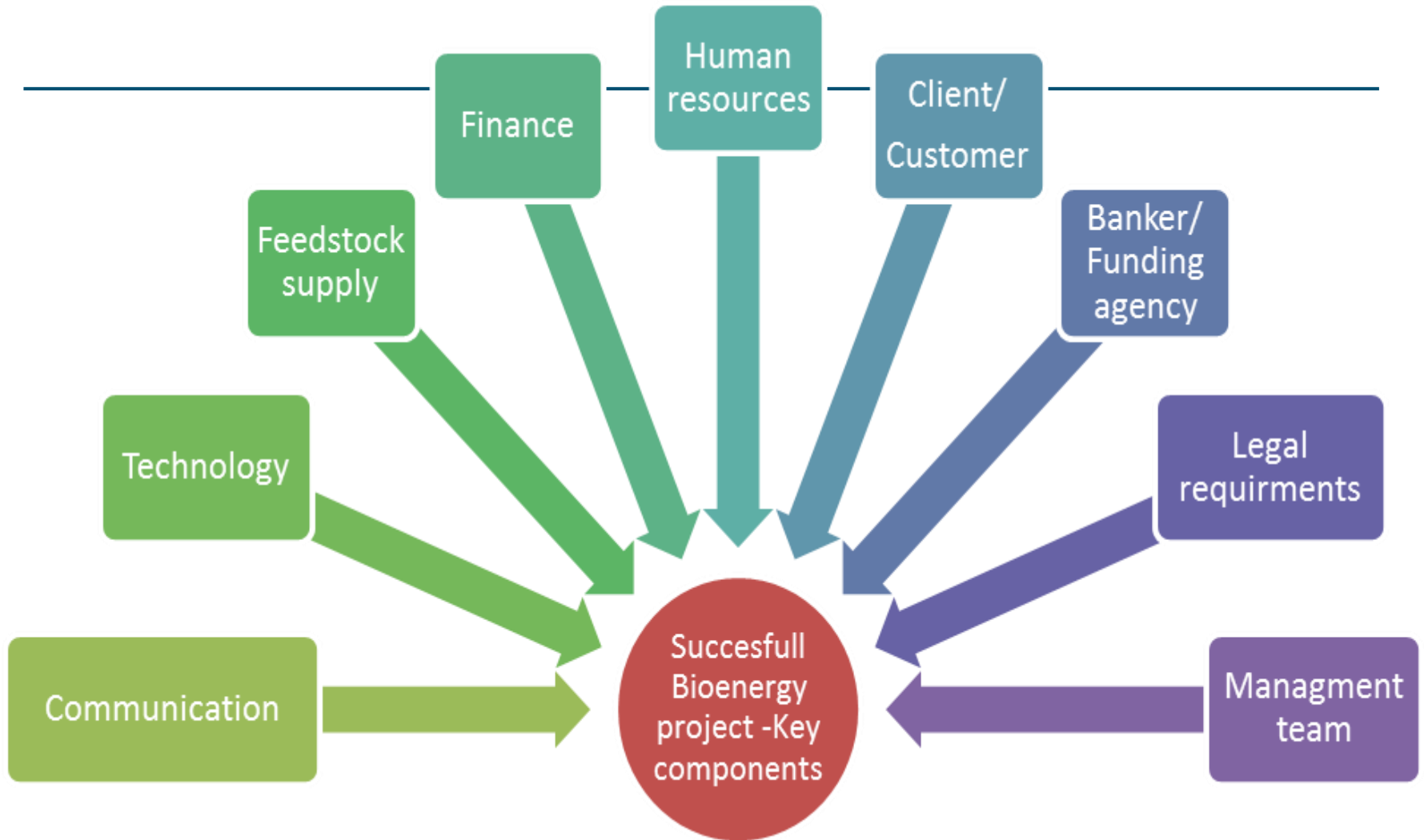
## # 5 Agriculture biomass

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- Millions of tonnes of various crop by product – dealing with livestock competition and thousands of farmers to get **long term contracts**

# Key components of Bioenergy project



# Key Considerations

## Possible Bioenergy Project

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- Cost of woodchips - \$ 50 per tonne

1 tonne at 50 % moisture = 2.23 MW/h or 8.2 GJ/tonne  
1 tonne at 20 % moisture = 4.1 MW/h or 14.7 GJ/tonne

- Cost of electricity to grid - \$ 90 MW per hour
- Cost of GJ of heat - \$ 5.25 GJ
- Working operating hours 8000 per year

# Key Considerations

## Possible bioenergy project

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- Moisture of woodchips 20-55 %
- Return on investment at 8 % rate
- Overhead at 25 % of total cost for building
- Maintenance 10 %
- Life of project 25 years
- Carbon credits are a



# Summary

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- By Jan 1, 2017 most of policy and details should be in place
- Bioenergy/Biomass is part of solution for Alberta energy portfolio
- Diversifying energy portfolio will diversify Alberta economy and the policy is sending a signal to investors in green energy
- There is plenty of biomass available in Alberta
- Securing biomass can be challenging



# Thank you !!

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**“Man's mind, once stretched by a new idea, never regains its original dimensions.”**

*Oliver Wendell Holmes*

# Contact and more information

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