

# Forest to furnace

New Zealand's biomass opportunity

Oliver Howitt





### EECA's strategy

#### Our mission

Mobilise New Zealanders to be world leaders in **clean and clever** energy use.

#### Our desired outcome

Energy users save energy, money and reduce emissions. Energy productivity and resilience improves.



#### **Energy efficiency first**

Efficient energy use is the first option users adopt.



#### Empower energy users

Users are empowered to control their energy.



#### Accelerate renewable energy

Users transition to low emissions energy.

#### **EECA's Levers**



#### Regulation

Of products, processes, and systems.



#### Information and motivation

To promote clean and clever energy choices.



#### **Targeted investment and support**

To demonstrate and scale up energy efficient technologies and renewable energy use.



### **RETA Biomass Insights**



## RETA develops what is required for regional fuel switching for industrial process heat

#### Regional stakeholder kick off meeting

- Process heat users
- Transpower & EDBs
- Forest owners & wood processors
- EDAs and councils
- Iwi

#### Demand assessment workstream

 Site thermal requirements and decarbonisation projects

2

#### Regional stakeholder workshop

3

• Present back findings from the workstreams and gather feedback

#### **Final integrated report**

4

- Combine workstream analysis and construct regional pathways
- Write, design, and publish report

#### Electricity availability workstream

• Spare electrical capacity; work and cost to electrify sites

#### **Biomass availability** workstream

Regional availability and cost
of potential biomass sources





Process heat uses a lot of fossil fuel

800

Sites included in RETA programme

### 6,000 MW

Fossil fuelled installed capacity

20 PJ

Baseline annual coal use

### 55 PJ

Baseline annual piped fossil gas use



## Energy efficiency and heat pumps are important

	Projects assessed	Fossil Fuel Reduction (PJ)	Fossil Fuel Reduction (MW)	Fossil Fuel Reduction
Energy efficiency	600	14	1,100	18%
Heat pumps	500	8	700	11%



Are you involved in energy efficiency and heat pump projects?



## NZ will harvest 30 – 40 million tonnes of wood per year



## Around 2 million tonnes of forest residues could be available per year



Cutover and landing residues – hard to recover!



## Around 7 to 8 million tonnes per year could be available for bioenergy



## Potential demand for biomass for process heat is around 4 million tonnes per year (30,000 TJ)





Economic pathway has 400 biomass projects

### 400

Sites with biomass boilers in the economic pathway

**2,500 MW** Biomass boiler capacity

30 PJ

Annual biomass energy demand

**4 Mt** 

Annual biomass demand ('green' basis)





### **Biomass considerations**



Biomass projects can be more complex than gas and electricity

- Switching from coal to biomass more straightforward than from gas.
- Sites need to consider fuel trucking, storage, and fuel feed systems.
- Additional requirements for consenting (PM10 emissions, air discharge consents, dust mitigation, fire risk engineering).



## Biomass fuels are different, requiring different boilers, with a CAPEX / OPEX trade off



Parameter	Hog fuel	Woodchips	Wood Pellets
Energy (GJ/tonne)	~7	~12	~18
Cost per GJ	\$	\$\$	\$\$\$
Boiler cost	\$\$\$	\$\$	\$
Storage type	Outside or covered	Outside or covered	Watertight
# deliveries & storage footprint	3.2 x coal	1.8 x coal	1.3 x coal



## Why aren't we seeing biomass projects?

- Coal is cheap compared to biomass
- Transitioning from piped gas to biomass is complex
- Biomass projects have high capital costs
- Perceived or actual lack of firm, long-term biomass supply at reasonable cost
- Insufficient, or incomplete information



### Let's work together



We are planning initiatives to accelerate the biomass market

Watch this space...



### What's blocking biomass projects?

Let's address these together.

- How can we progress each stage of the "funnel"?
  - How do we enhance understanding?
  - If biomass is best option, how to develop business cases?
  - Are there better financing mechanisms?
- Can we be smarter about projects is there a collective play (economies of scale)? Grouped procurement? Innovative solutions?









## Ngā mihi

Connect: oliver.howitt@eeca.govt.nz

