

Development of a Community Electricity and Heating System In Quesnel, BC

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Quesnel backgrounder

Central British Columbia (640 km N. of Vancouver)

Population ~ 24,000 (10,000 in city)

Advanced forest industry: 2 pulp mills, 5 sawmills, fibreboard, plywood, specialty, pellets

Facing major issues: forestry dependence, pine beetle, US housing market, tech change, etc.

New thinking is critical



Quesnel's response

Pine beetle is not the end of forest land

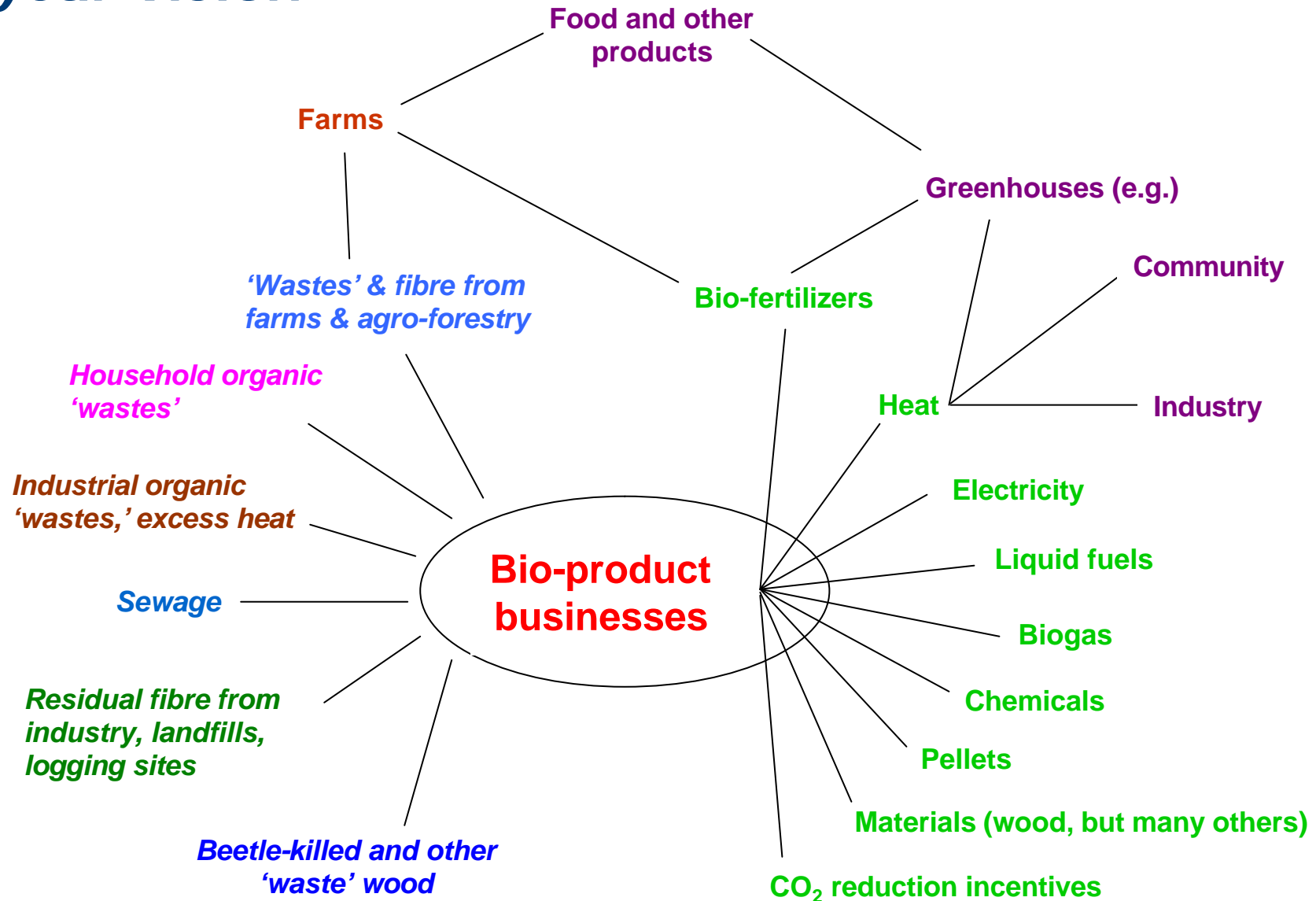
Vibrant future as a net wealth generator

Global view: tremendous assets

Multi-faceted bio-economy vision, in the context of the "Green City"

In sync with CO₂ laws, other green policies

Quesnel bio-products economy: 10 year vision

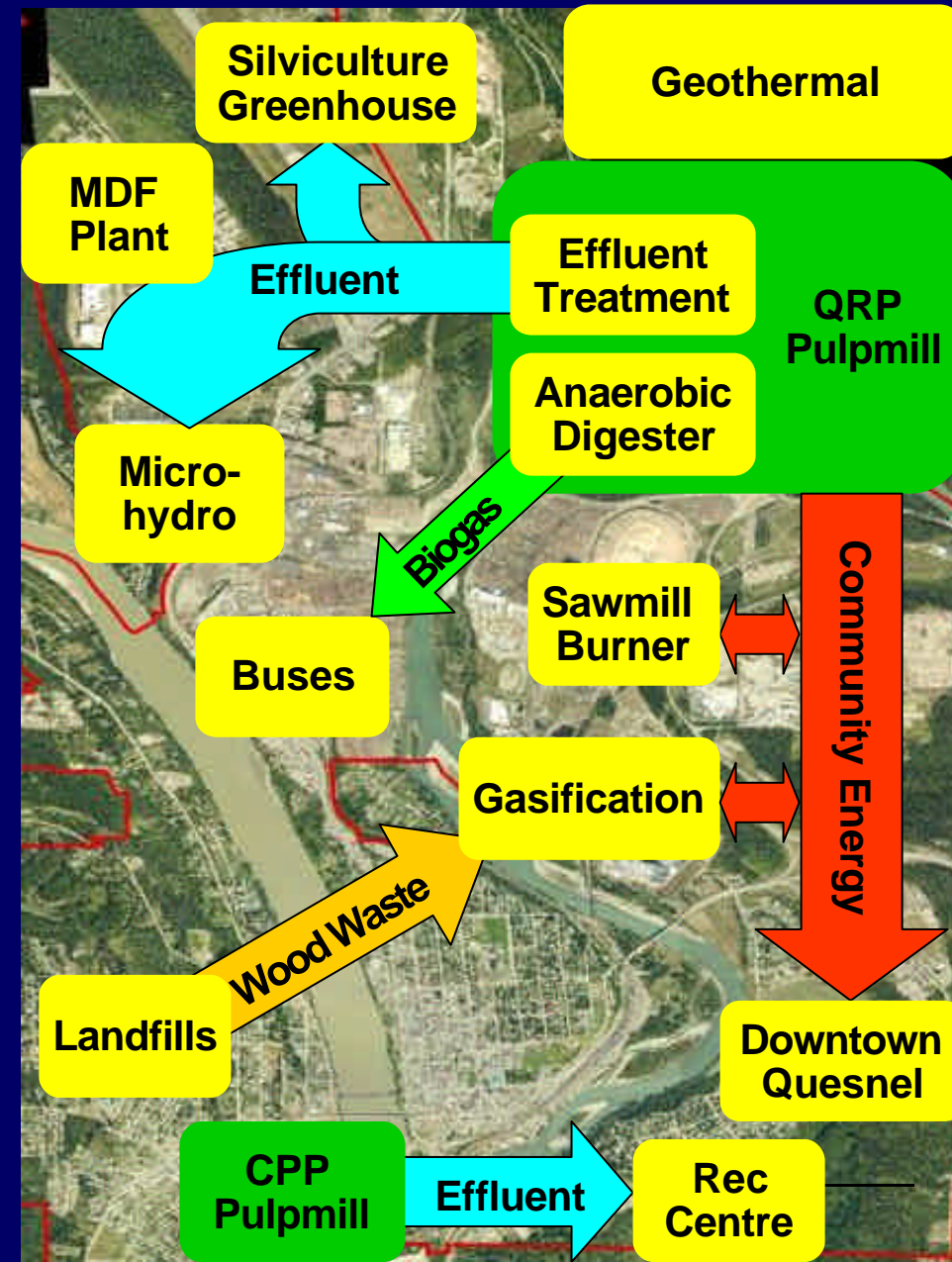


NOTES: 500 new jobs? Much more to this: foods, drugs, cosmetics, art. Strong relationship with efficiency work, other renewables, etc. Assumes integration with on-going forest products industry. Just burning wood for power won't serve long term community interests. Copyright: QCEDC 2009

Background

2008 Resource Recovery Study

1. Electricity/heat from sawmill
2. Biomethane from waste
3. Microhydro from QRP effluent
4. Heat from QRP effluent
5. Gasification of wood waste
6. Heat from CPP effluent
7. Electricity from geothermal



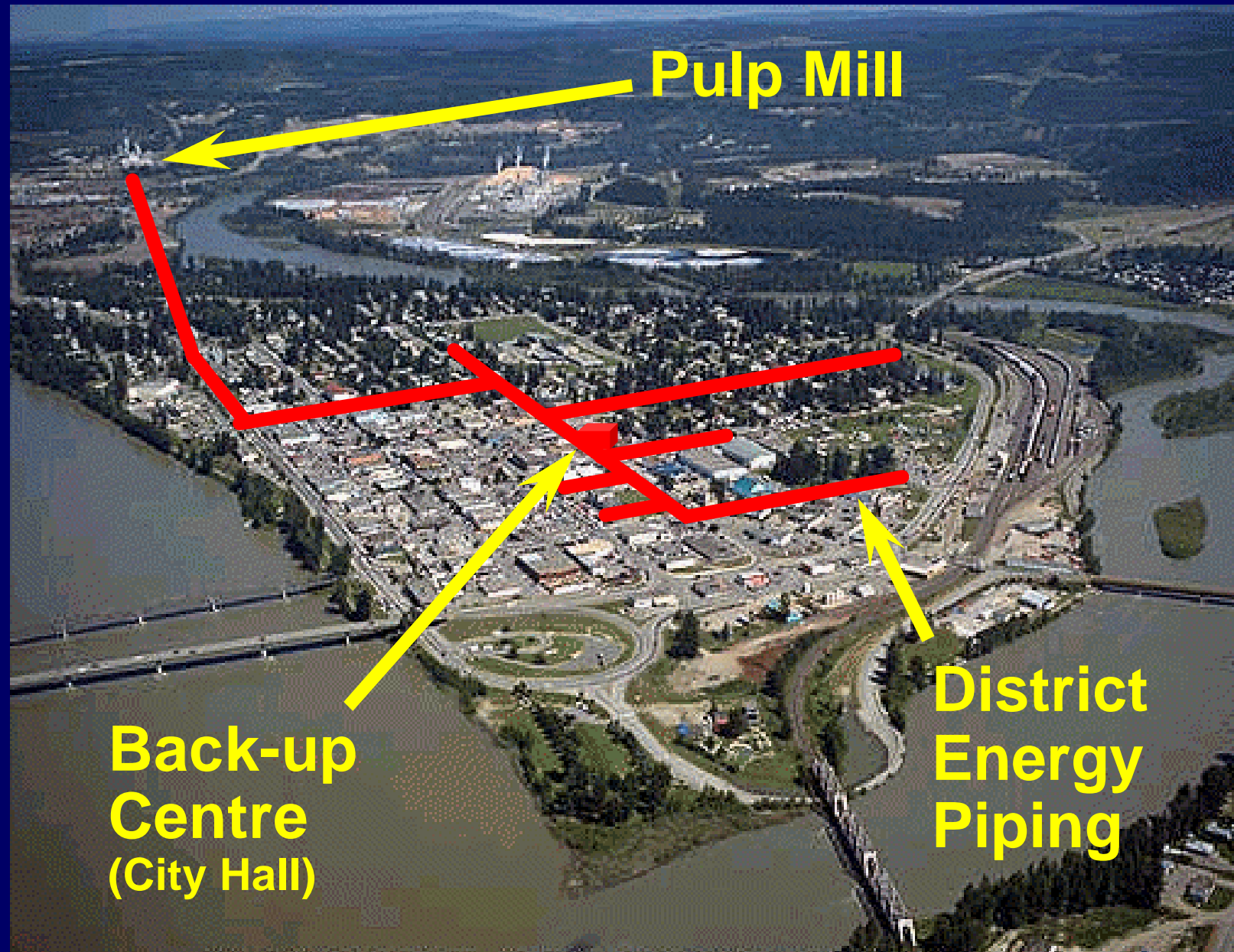
How the CHP System will work

Development - First Option



How the CHP System will work

Development - Second Option



How the CHP System will work

Development - Third Option



How the CHP System will work

Current arrangement



**Sawmill
Wood-Burner**

300°C

**Sawmill
Building**

**Planer Mill
Building**

**Individual
City Buildings**

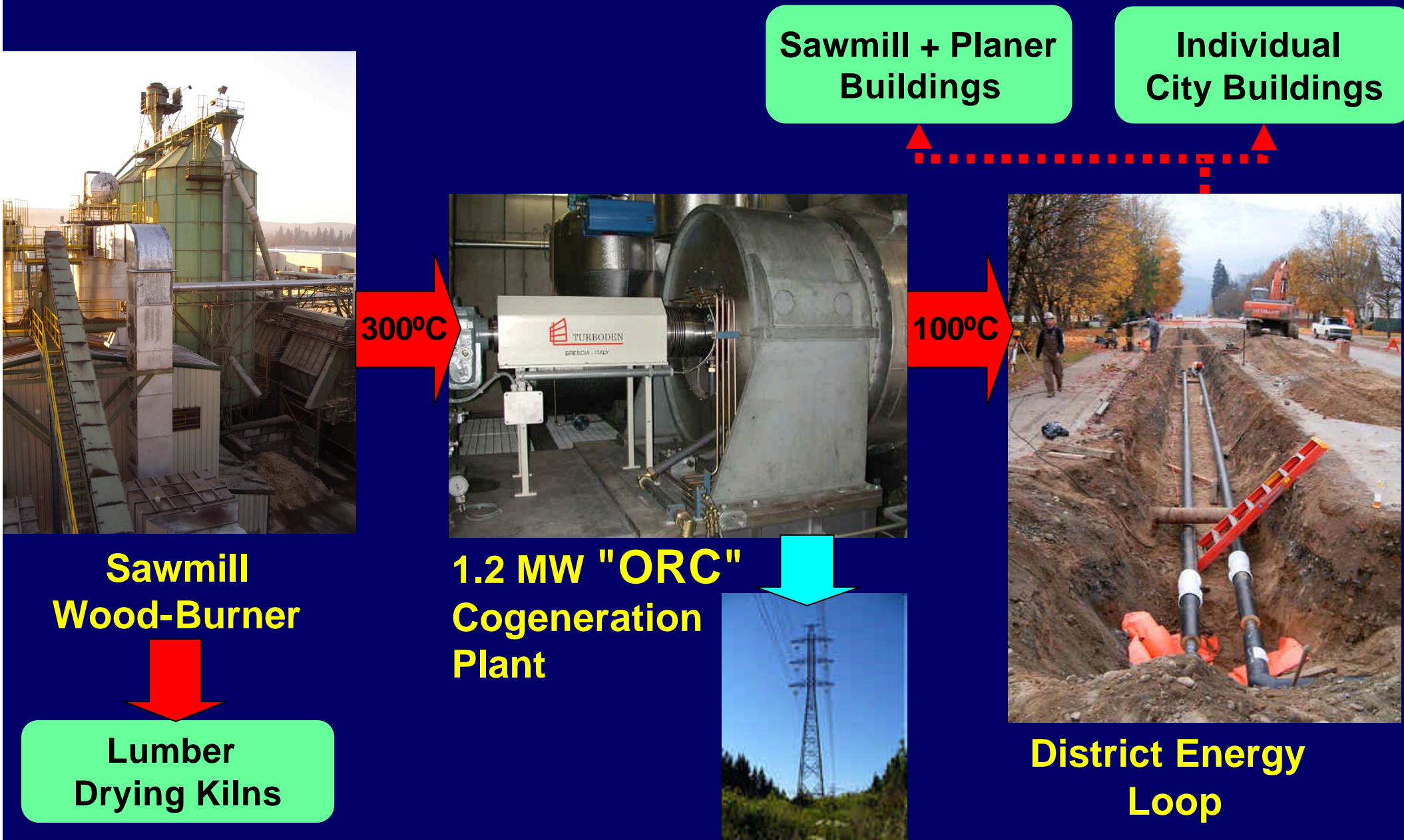
Natural Gas

Natural Gas

**Lumber
Drying Kilns**

How the CHP System will work

Planned arrangement



**Recovered
Saw Mill
Energy**

25%

**Recovered
Stack
Energy**

25%

**Biomass
Energy**

50%



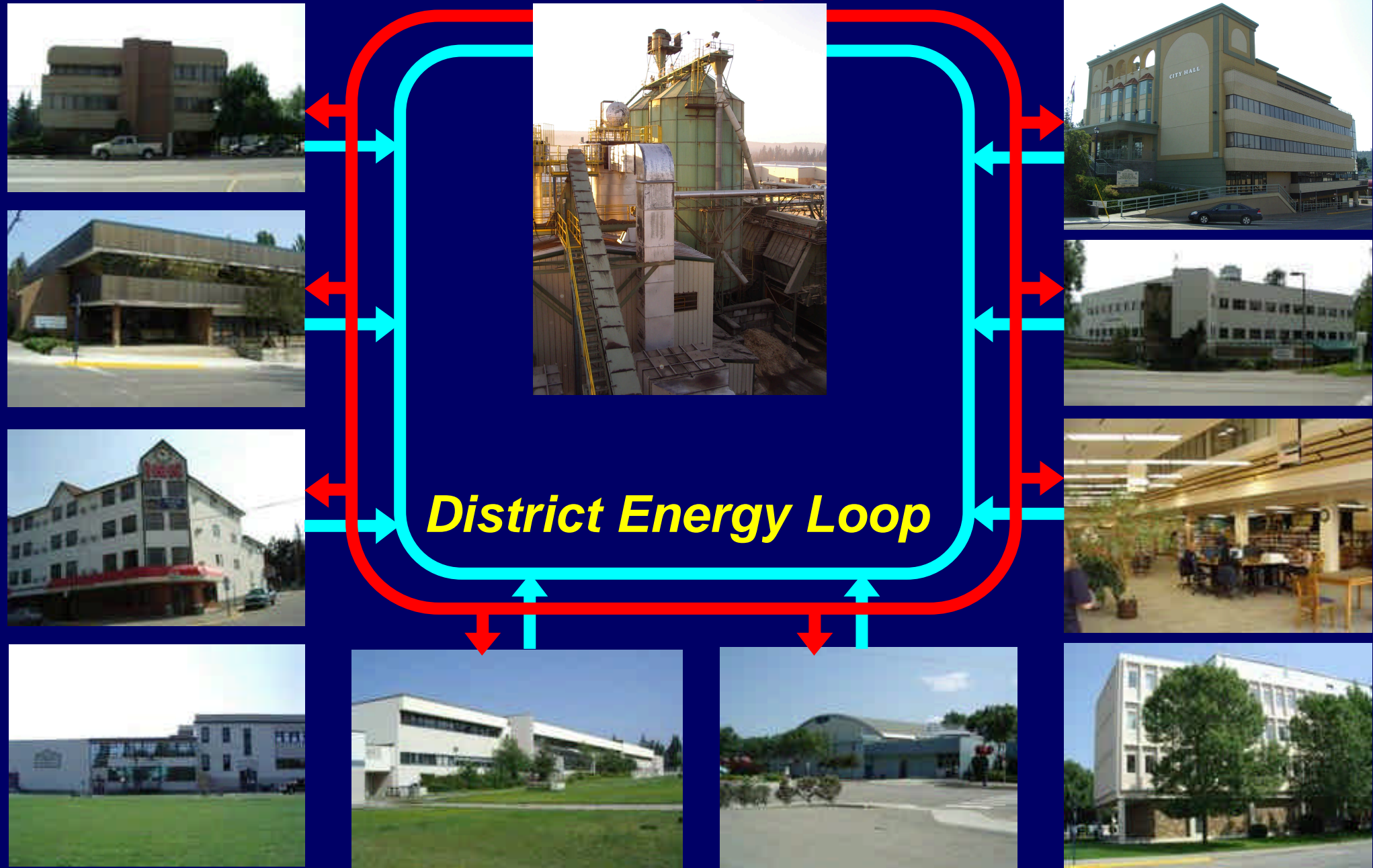
**Organic Rankine
Cycle Turbine**
1.2 MW(e)

Electricity
12 GWh/yr

District Heat
71,000 GJ/yr

How the CHP System will work

District energy clients



An aerial photograph of a river flowing through a forested landscape. The river is dark and winding, surrounded by dense green trees. In the upper left, there are some circular structures, possibly part of a golf course or park. The overall scene is lush and natural.

Natural Advantages ***Of CHP in Quesnel***

BC's Climate Change legislation

***Innovative Clean Energy Fund* capital**

A source of heat 2 km from the city

Enthusiastic collaboration of the community

Innovative industrial leadership

Appetite for integrated planning

(e.g. shared bike & piping path)

Innovative Aspects

Of the CHP project

Based on an existing asset

Conserving heat to increase electricity yield

Back-up boilers housed within City Hall

Business arrangement (industry/City/energy clients)

MERRC*

*** Municipal Energy and Resource Recovery Corporation**

Challenges

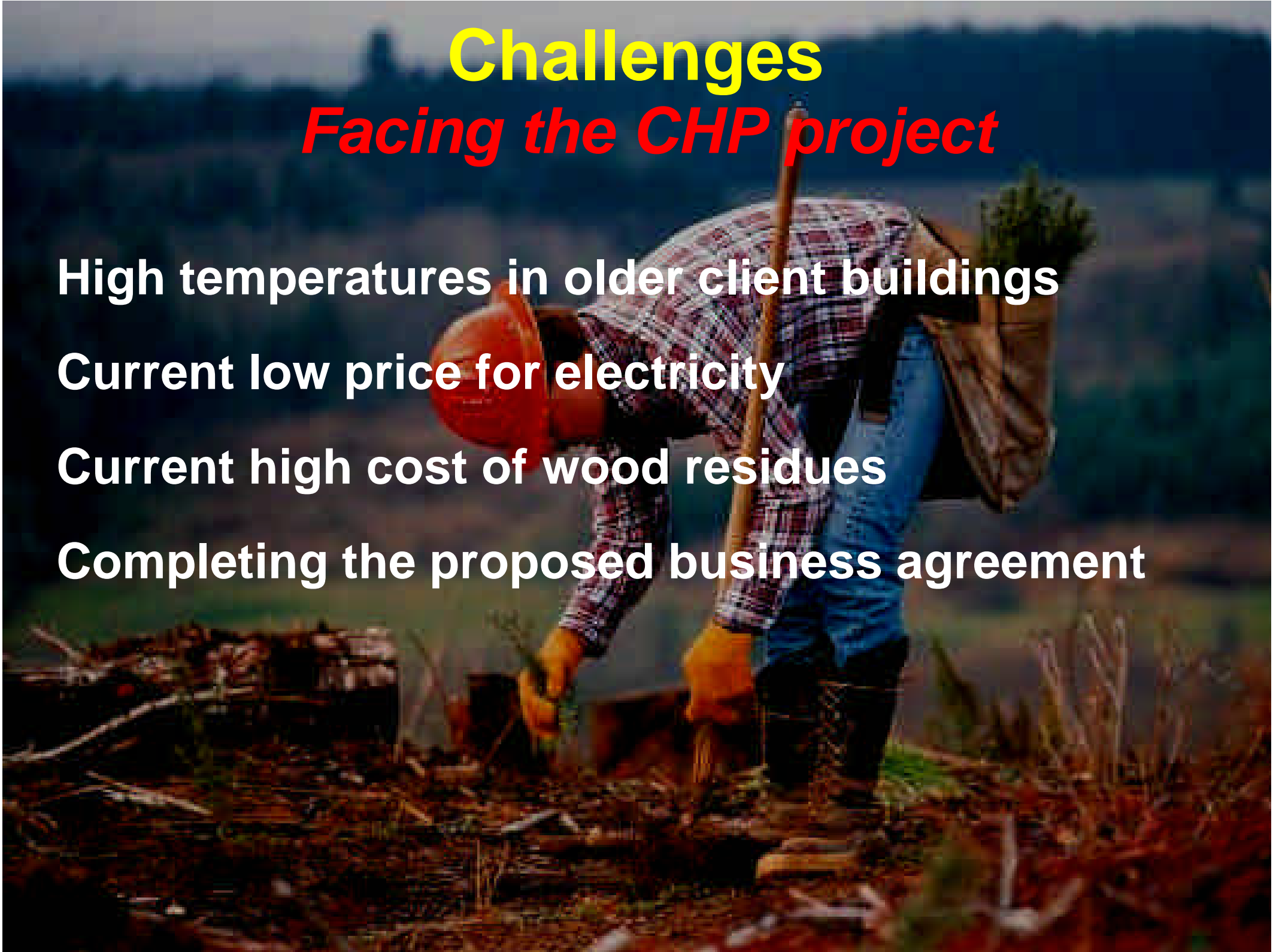
Facing the CHP project

High temperatures in older client buildings

Current low price for electricity

Current high cost of wood residues

Completing the proposed business agreement



Environmental benefits

GHG reductions - 5,600 t/yr of CO₂ (1,000 cars)

Local electricity - 12 GWh/yr (2,500 people)

GHG-neutral heat - 71,000 GJ/yr (4,500 people)



Economic & social benefits

Net revenues (shared by partners)

Stable energy costs; lower CO₂ compliance costs

Reduced “leakage” of energy payments

Local construction & operation jobs

Attractive source of heat for new industry

Demonstration & education value (green tourism)

International profile for Quesnel; community pride

Next steps

A background image of a cowboy riding a bucking horse at a rodeo. The cowboy is wearing a light-colored shirt, blue jeans, and a cowboy hat. The horse is brown and is bucking. The background is blurred, suggesting motion.

Secure the remaining financing

Engage a utility partner

Develop the MERRC

Negotiate commercial & ROW agreements

Detailed design & construction

Pendulum swinging back to rural areas?

- Huge, productive land bases
- Sophisticated infrastructure (energy, harvesting, transport, etc.)
- High quality workforce
- Integrates with on-going forest/agric industries

Sustainable?

Concerns emerging re forest biomass extraction and ecosystem health: no such thing as “waste”

Thanks!

Acknowledgements

BC Hydro
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Terasen Energy Services
West Fraser Timber Co.
Westcoast CED
Western Economic Diversification

More Information

**Quesnel Community and
Economic Development
Corporation**

www.quesnelinfo.com

Quesnel CHP Description

www.farallon.ca



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