BiOS
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BiOS

A roadside biomass volume calculator

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Stu Spencer, Senior Researcher

FPInnovations

BiOS App – Agenda

- What is it?
- Why is it needed?
- Walkthrough
- Next steps

BiOS App – What is it and why is it needed?

What is it?

- BiOS is an App designed to calculate available biomass volume and secondary harvest costs after completion of the primary harvest within a singular cutblock.
- It is designed to show GHG benefits of biomass recovery and measure viable options (pathways) to dispose of slash piles.
- BiOS is in the beta stage of development

BiOS App – What is it and why is it needed?

Why is it needed?

- Harvest of merchantable roundwood generates logging residues to the amount of ~10 million oven-dry tonnes (odt) per year (assuming .15 odt/m^3)
- It is estimated that in 2015, 2.5M odt of forest fibre was piled and burned in BC. Need to mitigate particulate matter and GHG emissions from existing slash burning operations.
- BC has committed to reducing greenhouse gas emissions to 80% below 2007 levels by 2050.

BiOS App – What is it and why is it needed?

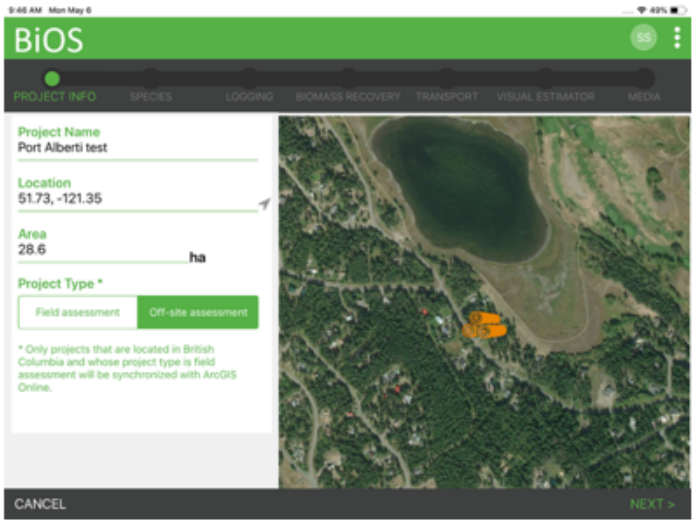
Why is it needed?

- Improve TSA-level estimates by providing a tool to foresters to better assess the amount of logging residues and to measure the supply chain cost and carbon footprint.
- Provide data to industry which will help to improve biomass utilization and support the bio-economy.

BiOS App Walkthrough

Project Info Page

Step 1 – A project name is entered. BiOS will determine the coordinates automatically if the assessment is completed in the field or coordinates can be entered manually.
Step 2 – Enter the area for the cutblock
Step 3 – Pick option 'Field assessment' or 'Off-site assessment'.

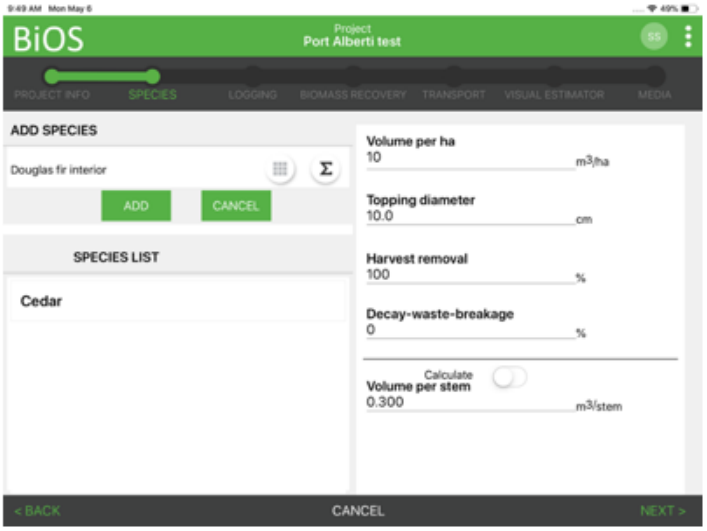


BiOS App Walkthrough

Species Page

Step 1 – Add a species from the species list.
Step 2 – Enter from cruise data:

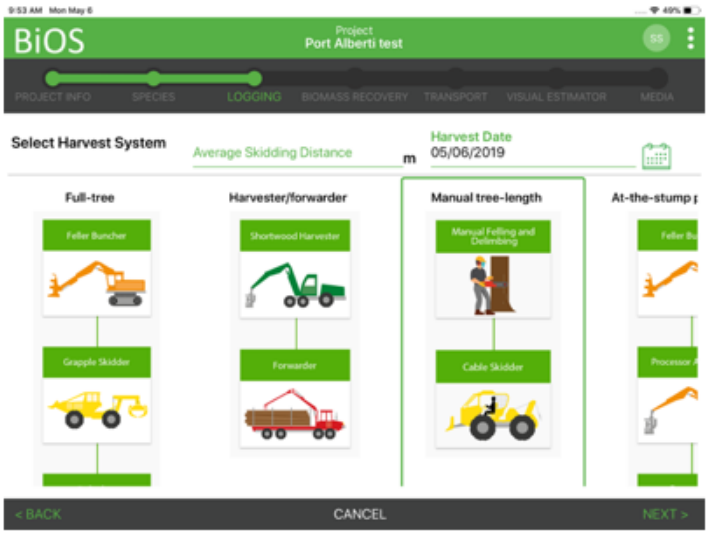
- Volume per ha
- Topping diameter
- Harvest removal %
- Decay-waste-breakage %
- Volume per stem



BiOS App Walkthrough

Logging Page

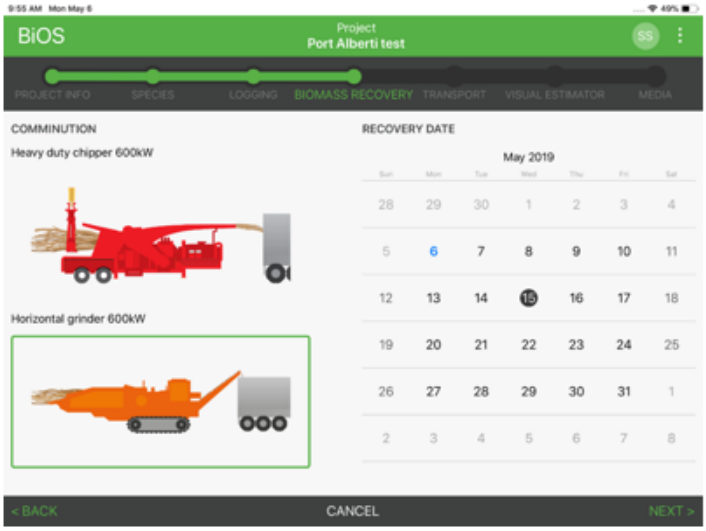
Step 1 – Choose the primary harvest method (7 methods to choose from but only conventional ground based at this time).
Step 2 – Choose an average 'skidding distance'.
Step 3 – Enter the harvest date.



BiOS App Walkthrough

Biomass Recovery Page

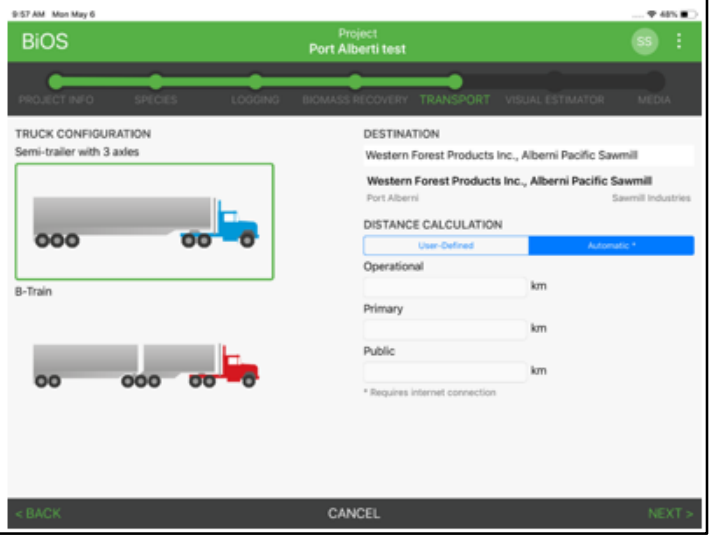
Step 1 – Choose a secondary harvest method. (Chipping and grinding currently, unprocessed collection in development).
Step 2 – Enter a secondary harvest date.



BiOS App Walkthrough

Transport Page

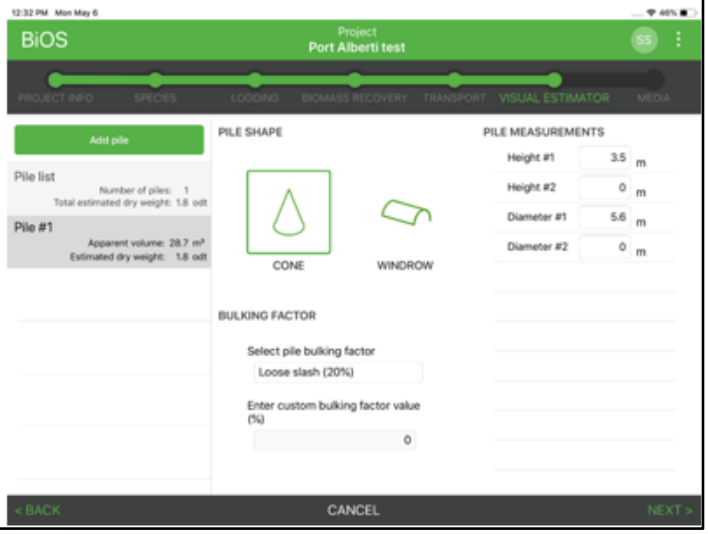
Step 1 – Choose a truck configuration (currently 53ft or B-train options, but truck specs can be configured to meet any need).
Step 2 – Enter a destination. If delivery point is not available in list, enter distance into cycle time calculator manually.



BiOS App Walkthrough

Visual Estimator Page

Step 1 – Add a pile.
Step 2 – Pick a pile shape, a bulking factor and enter the pile dimensions. (a function where the GPS footprint can be downloaded is in development).



BiOS App Walkthrough

BiOS App Reporting

The report page provides a summary of biomass recovery information

Biomass recovery

Area	28.6 ha
Recovered biomass	30.4 odt
Average moisture content	45.0 %
Biomass yield	1.1 odt/ha
Biomass (odt)/Merchantable (m^3)	0.084 odt/m^3
Low heating value	10.0 MJ/kg
Fuel consumption	9.4 L/odt
GHG emissions (CO_2eq)	0.8 tonnes

BiOS App Walkthrough

BiOS App Reporting

Biomass transportation and costing

Biomass transport

Distance to Western Forest Products Inc., Alberni Pacific Sawmill by road category	**630.2 km**
Operational (resource road)	63.0 km
Primary (resource road)	63.0 km
Public (paved)	504.1 km
Fuel Consumption	53.0 L/odt
GHG emissions (CO2eq)	4.4 tonnes

Biomass supply cost

Recovery (stump to roadside)	37.17 $/odt
Transport (roadside to mill)	7.54 $/odt
Total	44.71 $/odt

BiOS App Walkthrough

BiOS App Reporting

Carbon reporting by species

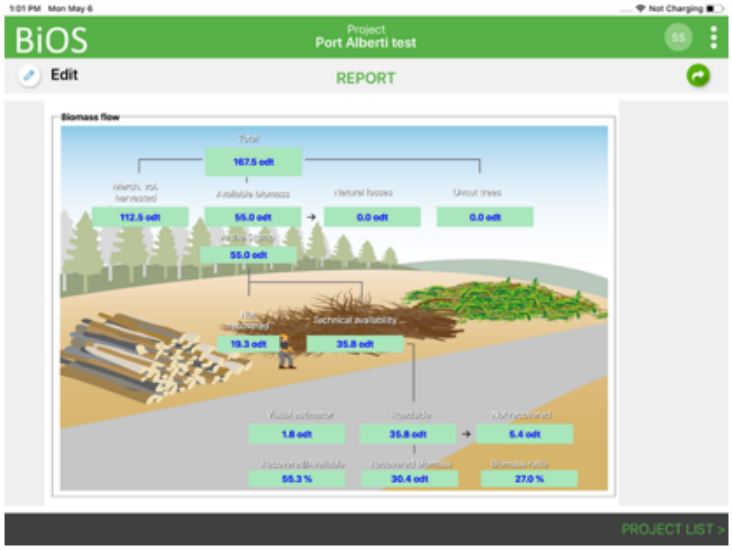
Species breakdown

Species	Carbon delivered (tonnes)	Avoided GHG (tonnes CO2eq)	odt	odt/m³	odt/ha
White spruce	188.3	613.7	376.5	0.1740	33.03
Black cottonwood	0.0	0.0	0.0	0.0000	0.00
Trembling aspen	0.0	0.0	0.0	0.0000	0.00
White birch	0.0	0.0	0.0	0.0000	0.00
	188.3	613.7	376.5	0.1740	33.03
Carbon ratio (delivered:emitted)	34:1				

BiOS App Walkthrough

BiOS App Reporting

The biomass flow page shows a breakdown of how fibre from the cutblock is categorized



BiOS App Walkthrough

BiOS App Reporting

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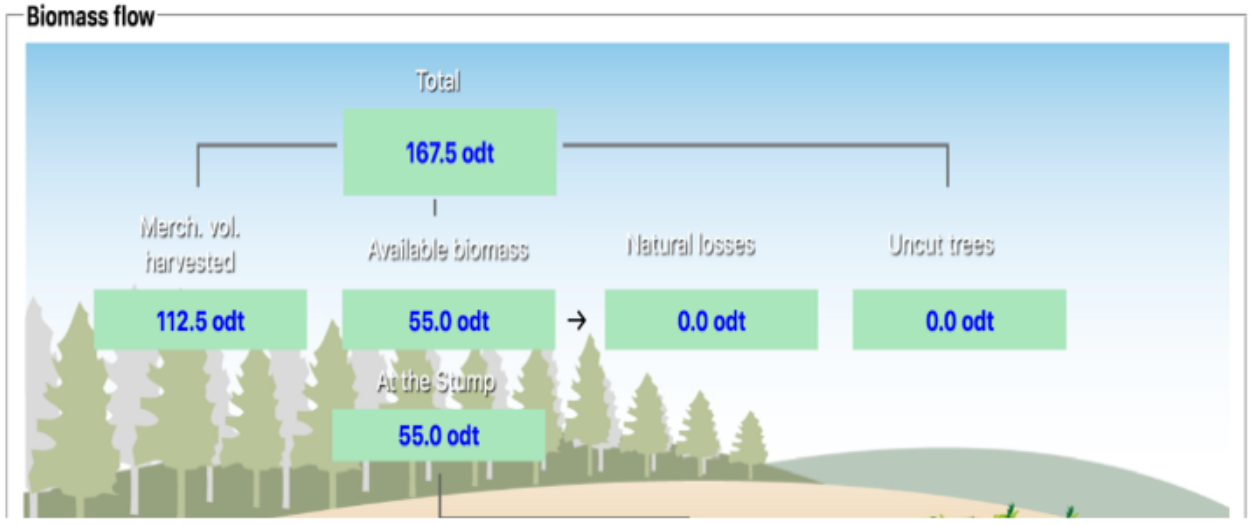

BiOS App Walkthrough

BiOS App Reporting

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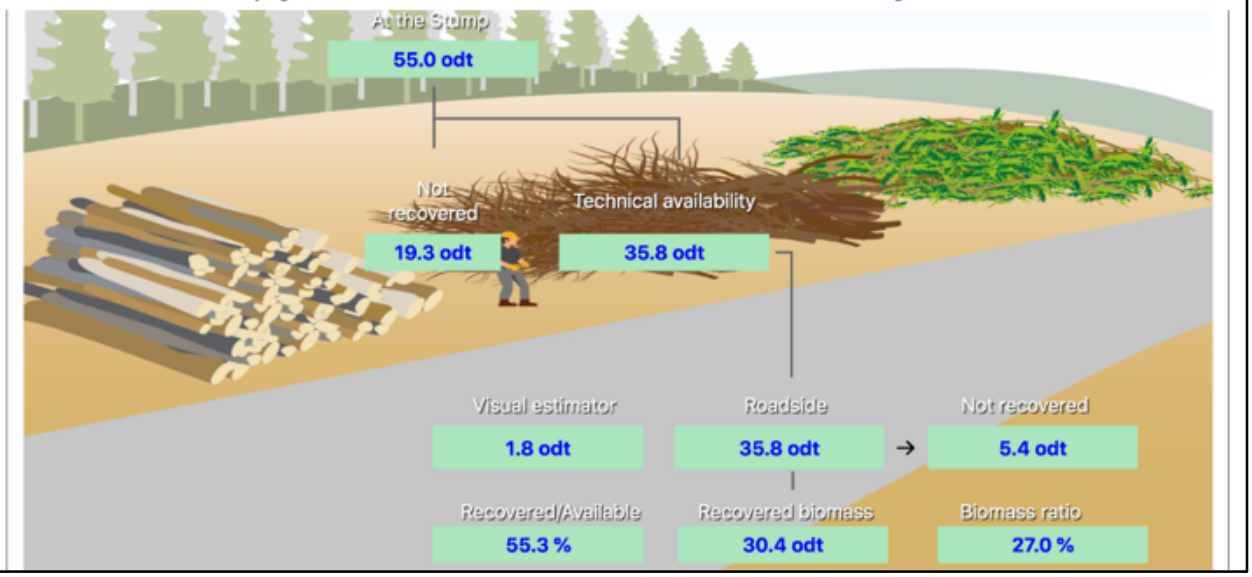
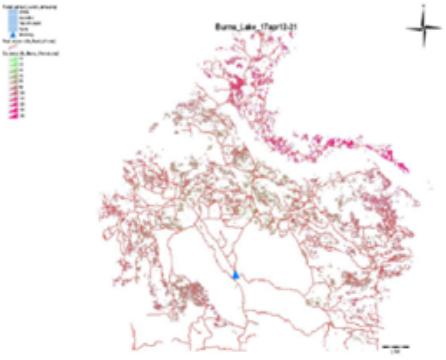


BiOS App – Next steps



High Level

- Development of an open maps' viewer published by FLNRORD through an easily accessible web portal. This will allow biomass ventures to quickly assess the biomass potential surrounding a specific community, along with the supply cost and carbon footprint.

BiOS App – Next steps

Further validation necessary

- Biomass flow and visual estimator.
- Allometric equations for volume calculation in different BGCZ's.
- At least one full validation for each of the wooded BCGZ's.

BiOS App

If you'd like to try the BiOS App it can found at no cost for both Android and Apple tablets at Google Play and the Apple Store.

We'd love to hear from you if you have comments or suggestions about how to make the App more relevant to small tenure holders!

We're also looking for collaborators that are willing to help us validate the app. If you are interested, please come talk to me later.

THANK YOU

Stéphane Renou
President and CEO
FPInnovations