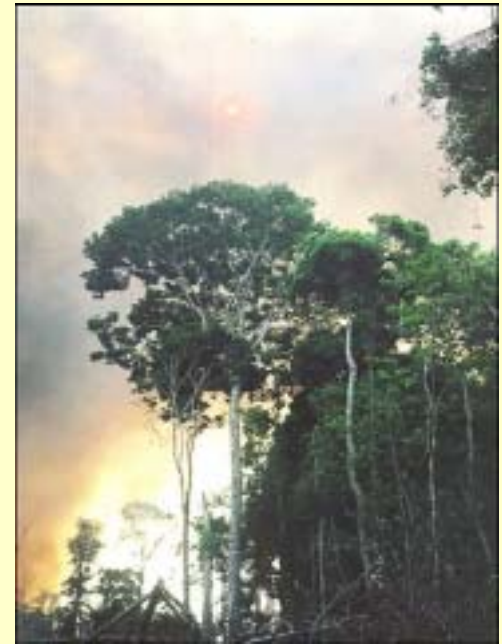


# **RILSIM: A Cost Accounting Tool for Reduced Impact Logging**



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## Is Reduced Impact Logging Cheaper?



•If you think you are going to hear a presentation on the cost effectiveness of RIL, I hate to disappoint you. The limited amount of studies looking at this issue have had mixed results at best. Currently, the real answer is “it depends”

## What does it depend on?



Value of the timber resource (volume/species)

Topography

Equipment/harvesting system

Skill level of harvesting crews

Effective harvesting area

Area excluded due to RIL

Hauling costs

# Is Reduced Impact Logging Cheaper?



- Factors can be highly variable from site to site so the bottom line financial benefit/cost is difficult to generalize
- It is in this context that RILSIM was developed. So specifically, Why RILSIM?

## Why RILSIM?



- Several recent conferences on RIL called for technologies that would simplify financial analysis of timber harvesting in order to determine if their particular harvesting situation is financially sound
- If financially viable, it would provide a strong justification to implement RIL practices

## Why RILSIM?



- The limited studies to date do not always consider the same variables and protocols, making comparisons difficult
- Some have argued that RIL practices could qualify as carbon offset activities or other mechanisms, but there are few simple tools to analyze the financial viability, especially the harvesting costs

## Why RILSIM?



- Implementing RIL may or may not be cost effective as compared to conventional logging (Tay, 2000, Holmes,et al. 2000, ed. Enters, et al., 2001)
- If the major cost centers could be identified, companies could take a logical stepwise approach to adopting RIL practices

## RILSIM Objectives



Develop and distribute a generic financial simulation model that will:

- Permit loggers, foresters, government agencies, NGO's and the public to analyze and compare RIL and CL costs under identical local conditions for themselves
- Promote widespread adoption of reduced-impact logging through improved understanding of the financial costs and benefits of RIL vs. CL



# RILSIM Design Criteria



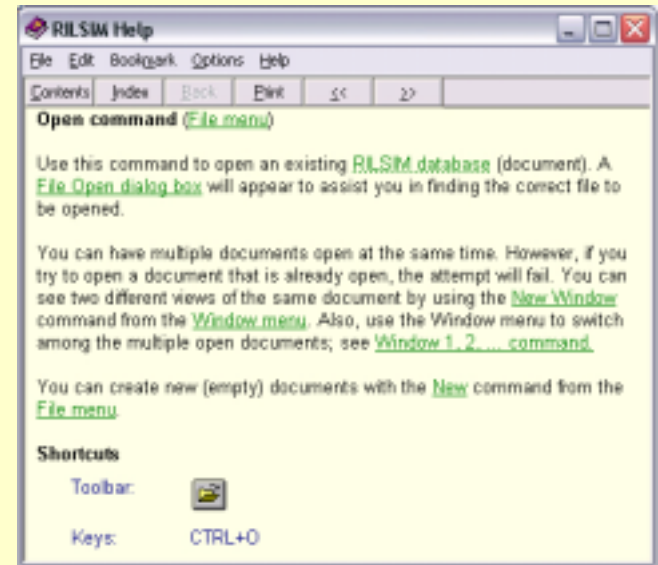
- Modest hardware requirements: < 20 MB space on disk, 32 MB RAM, Pentium with at least 75 MHz clock speed
- No cost other than a modest distribution charge
- No additional software needed, but should be compatible with spreadsheets
- Simple to use and understand for people with little computer experience

# RILSIM Design Criteria



- Learning tool: Help users learn RIL and cost analysis
- Platform: Microsoft® Windows® 95 or later
- Comprehensive online help system, printed User's Guide
- Results can be expressed in any currency
- Source code available to permit modifications (e.g., translation into other languages) or additions

# THE RILSIM Program




- Data forms
- Defining Activities
  - Precedence Relationships
  - Production Rates and Units
  - Assigning Personnel and Equipment to Activities
  - Using the Activity Chart
- Running Scenarios
- Displaying, Printing, and Comparing Results

RILSIM - [D:\Documents\RILSIM Data\Samples\TFF RIL.rdb]

File Edit Record View Options Window Help

General Data | Wage Data | Equipment Data | Activity Data | Scenario Data


 GENERAL DATA FORM

Company or Organization

Name of Analyst

Project Description

Logging Area (ha)

Difficulty Index  

Decimal-point symbol  (dot)

Compounding & Discounting

Annual Interest Rate (%)

Frequency of Calculation

Currency

Name


Symbol

Decimal Places

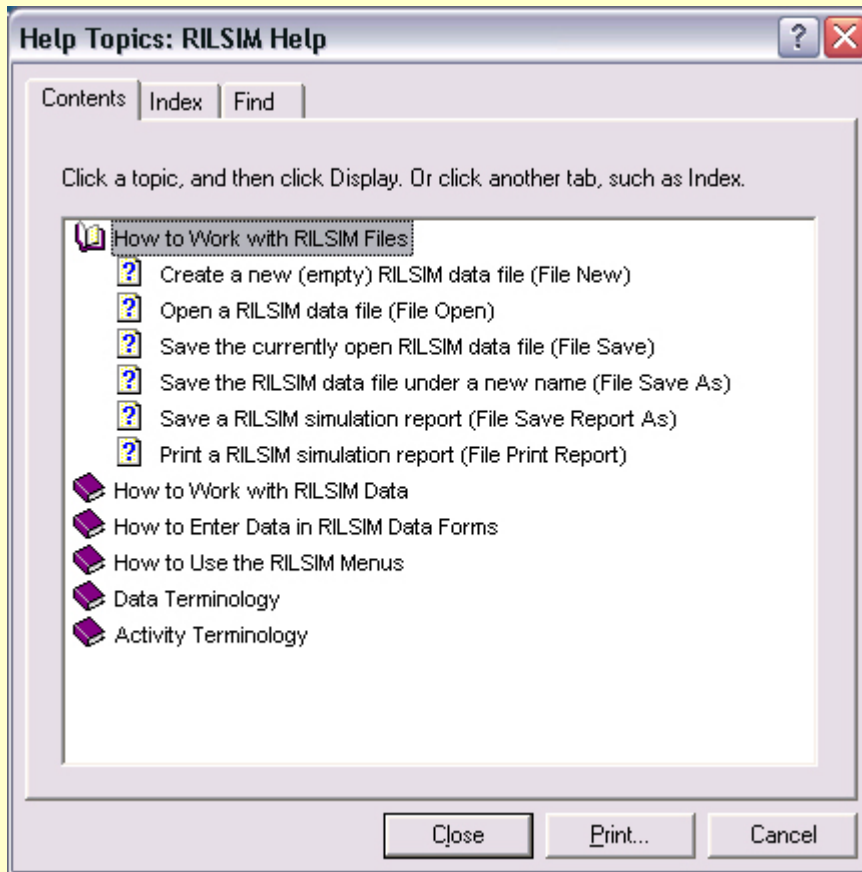
Time Rates

Piece Rates

Simulation Time Unit



For Help, press F1



RILSIM - [D:\Documents\RILSIM Data\Samples\TFF RIL.rdb]

File Edit Record View Options Window Help

General Data Wage Data Equipment Data Activity Data Scenario Data

WAGE DATA FORM

Record No. 11 of 17

Job Title: Skidder Operator

Type of Wage:
  Time-Based Wage
  Piece Rate per [ ]
 

COST per WAGE PERIOD (\$)		DAILY and HOURLY COST	
Base Wage	531.30	Workdays per Wage Period (days)	22
x Payroll Cost Rate (%)	47.16	Daily Cost (\$/day)	37.91
= Payroll Cost	250.56	Workhours per Workday (hr/day)	8
+ Field Allowance	52.17	Hourly Cost (\$/hr)	4.74
+ Other Costs	0.00		
= Total Cost	834.03		

Update Data Cancel Edit New Record

**RILSIM**

For Help, press F1

NUM

RILSIM - [D:\Documents\RILSIM Data\Samples\TFF RIL.rdb]

File Edit Record View Options Window Help

General Data Wage Data Equipment Data Activity Data Scenario Data

WAGE DATA FORM

Record No. 9 of 17

Job Title Sawyer (\$/m3)

Type of Wage
 

- Time-Based Wage
- Piece Rate per m3
  - ha
  - km
  - m3
  - t

PIECE RATE PAYMENT (\$/m3)


Base Wage	0.17110
x Payroll Cost Rate (%)	47.16
= Payroll Cost	0.08069
+ Field Allowance	0.02100
+ Other Costs	0.00000
= Total Cost	0.27279

Update Data Cancel Edit New Record

**RILSIM**

For Help, press F1

NUM



RILSIM - [D:\Documents\RILSIM Data\Samples\TFF RIL.rdb]

File Edit Record View Options Window Help

General Data Wage Data **Equipment Data** Activity Data Scenario Data

 EQUIPMENT DATA FORM

Record No.  of

Equipment Item

Type of Cost  
 Time-Based Cost  
 Piece Rate per



Cost per Operating Hour for this Equipment Item (\$/hr)

Depreciation	<input type="text" value="8.28"/>	Repairs & Maintenance	<input type="text" value="7.30"/>
Tires or Tracks	<input type="text" value="7.83"/>	Taxes, Insurance & Interest	<input type="text" value="7.04"/>
Fuel Cost	<input type="text" value="6.00"/>	Other Costs	<input type="text" value="0.00"/>
Oil, Filters, Lubricants	<input type="text" value="0.89"/>	- Resale or Salvage Credit	<input type="text" value="5.80"/>
Tools	<input type="text" value="0.00"/>	= Total Cost	<input type="text" value="32.30"/>
Cables, Chokers, Rigging	<input type="text" value="0.76"/>		



For Help, press F1

NUM



RILSIM - [D:\Documents\RILSIM Data\Samples\TFF RIL.rdb]

File Edit Record View Options Window Help

General Data | Wage Data | Equipment Data | Activity Data | Scenario Data


 ACTIVITY DATA FORM
 Record No.  of

Activity Name: 
 Type: 


Preceding Activity:

Precedence Type:

		Activity Unit Costs		Total Activity Cost (\$)	
Operating Hours per Week	<input type="text" value="40"/>	Piece Rate (\$/m3)	<input type="text" value="0.00000"/>	Unadjusted	<input type="text" value="0.00"/>
Beginning Week	<input type="text" value="0"/>	Time Rate (\$/hr)	<input type="text" value="39.18"/>	Discounted	<input type="text" value="0.00"/>
Startup Delay	<input type="text" value="0"/> weeks				
Production Rate	<input type="text" value="31.66"/> m3/hr				
Conversion	<input type="text" value="25.36"/> m3/ha				
Ending Week	<input type="text" value="0"/>				
Production	<input type="text" value="0"/> m3				



For Help, press F1

**RILSIM Chart of Activities** [?] [X]

File Edit Help

Use this diagramming worksheet to name and organize the activities and their precedence relationships.



- [-] Harvest Unit Layout
  - [-] Inventory
    - [-] Tree Marking
      - [-] Skidtrail Layout
        - [-] Felling & Bucking
          - [-] Skidding
            - [-] Log Sorting & Loading
              - [-] Log Transport

- [-] Road Layout
- [-] Landing Layout
  - [-] Road Construction
    - [-] Landing Construction
- [-] Vine Cutting


**RILSIM**

Close

RILSIM - [D:\Documents\RILSIM Data\Samples\TFF RIL Net Revenue.rdb]

File Edit Record View Options Window Help

General Data Wage Data Equipment Data Activity Data Scenario Data

 SCENARIO DATA FORM

Scenario Description  
 Reduced-Impact Logging, Net Revenue

Calculate Net Revenue from Log Production

Revenue-Producing Activity:  
 Log Deck Operations

Anticipated Log Price: 25.50 \$/m3

Compounding and Discounting  
 To Beginning of Time Period:  
 To Beginning of Activity:  
 Log Deck Operations

Total Cost (\$)	
Unadjusted	12 425.97
Compounded	12 589.67
Net Revenue (\$)	
Unadjusted	52 242.03
Discounted	51 574.72

Scenario run time: 0.010 seconds

Simulated Operating Time 16.0852762743 weeks

Update Data Cancel Edit Run Scenario



For Help, press F1

NUM

**RILSIM Simulation Report**

Prepared: Friday, 31 October 2003 02:44:21

Section 1. Overall Summary

Project Description RIL Practices  
 Organization The RILSIM Project  
 Analyst Gary Man  
 Scenario Reduced-Impact Logging, Total Cost  
 Logging Area 100 ha  
 Difficulty Index 1.0  
 Annual Interest Rate 27.4 %  
 Interest Compounded Monthly  
 Reference Time for Interest Beginning of week 32  
 Simulation Time Unit 1 week  
 Comparison Basis Net Revenue from Log Production  
 Log Price 30.00 \$/m3  
 Currency US dollars (\$)

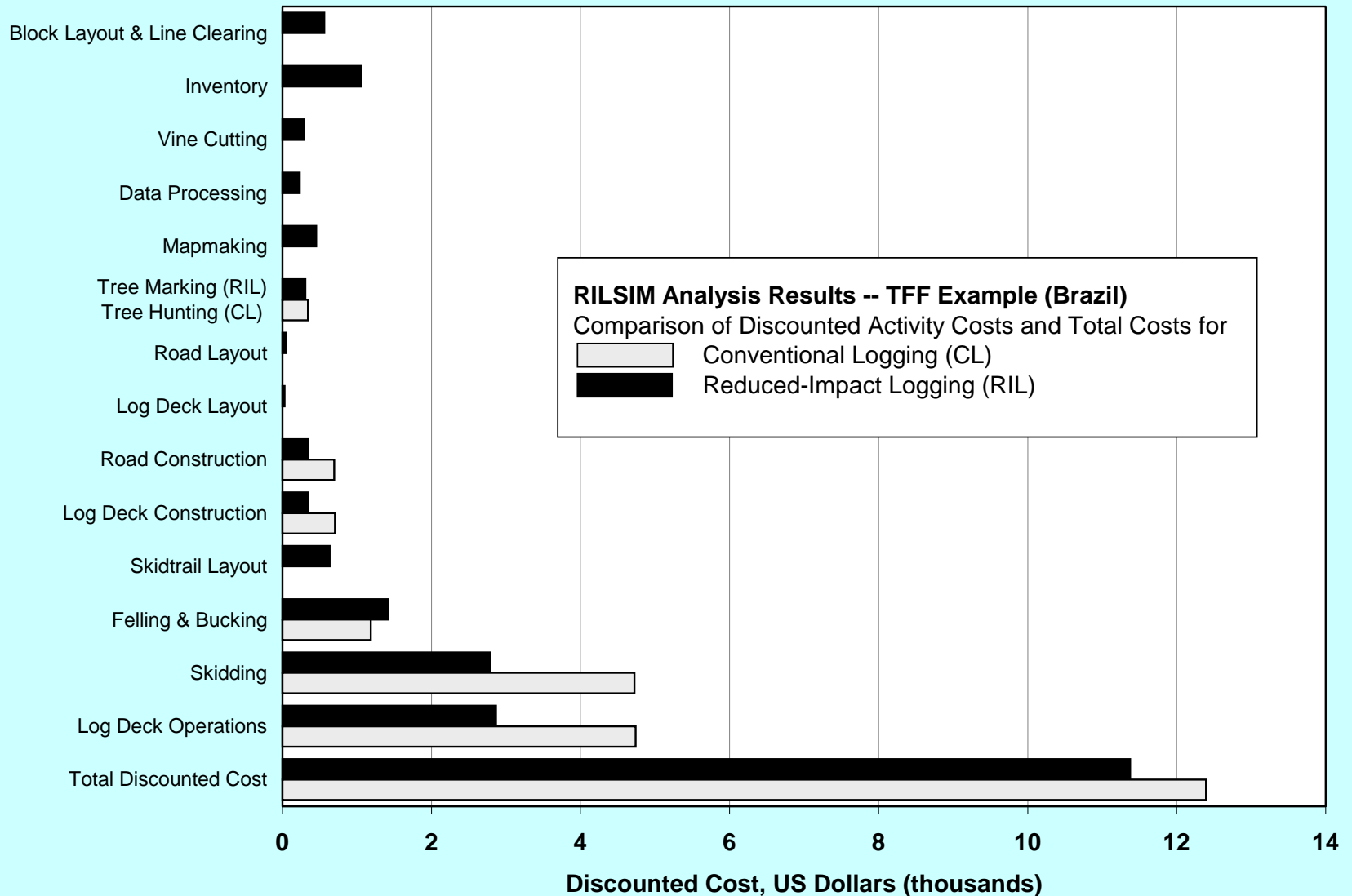
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Section 2. Activity Report

Activity No.	Activity Name	Begin Week	End Week	Duration	Cost (\$)	Discounted or Compounded Cost (\$)		
7	Road Layout	0	0.182448458311	0.182448458311	56.4931290636	66.5369102046		
1	Block Layout & Line Clearing	0	2.40096038415	2.40096038415	564.972693373	661.587665477		
8	Log Deck Layout	0.182448458311	0.288543625676	0.106095167365	32.9254512119	38.7500516051		
9	Road Construction	4	4.2	0.2	363.215904045	418.949185712		
2	Inventory	4	6.10084033613	2.10084033613	1076.720094	1235.80793584		
3	Vine Cutting	4	6.10084033613	2.10084033613	300.379370822	344.761105782		
10	Log Deck Construction	4.2	4.4	0.2	363.215904045	418.512870195		
4	Data Processing	20	20.4571428571	0.457142857143	239.562249455	254.051309601		
5	Mapmaking	20.4571428571	21.7213653603	1.26422250316	473.735040225	500.14025596		
6	Tree Marking	32	33.0167768175	1.01677681749	322.306904319	320.618060316		
11	Skidtrail Layout	33.0167768175	35.1489729795	2.13219616205	682.598806818	673.477500251		
12	Felling & Bucking	35.1489729795	39.5710397203	4.42206674077	1570.53229375	1523.33971673		
13	Skidding	39.5710397203	41.5735665681	2.00252684776	3138.47163066	2993.5886351		
14	Log Deck Operations	39.5710397203	41.5735665681	2.00252684776	3240.84205333	3091.23327553		
Total Simulated Operating Time (weeks)						41.5735665681		
Total Cost and Total Compounded Cost (\$)							12425.9715251	12541.3544783
Net Revenue and Discounted Net Revenue (\$)							63654.0284749	60026.5225526

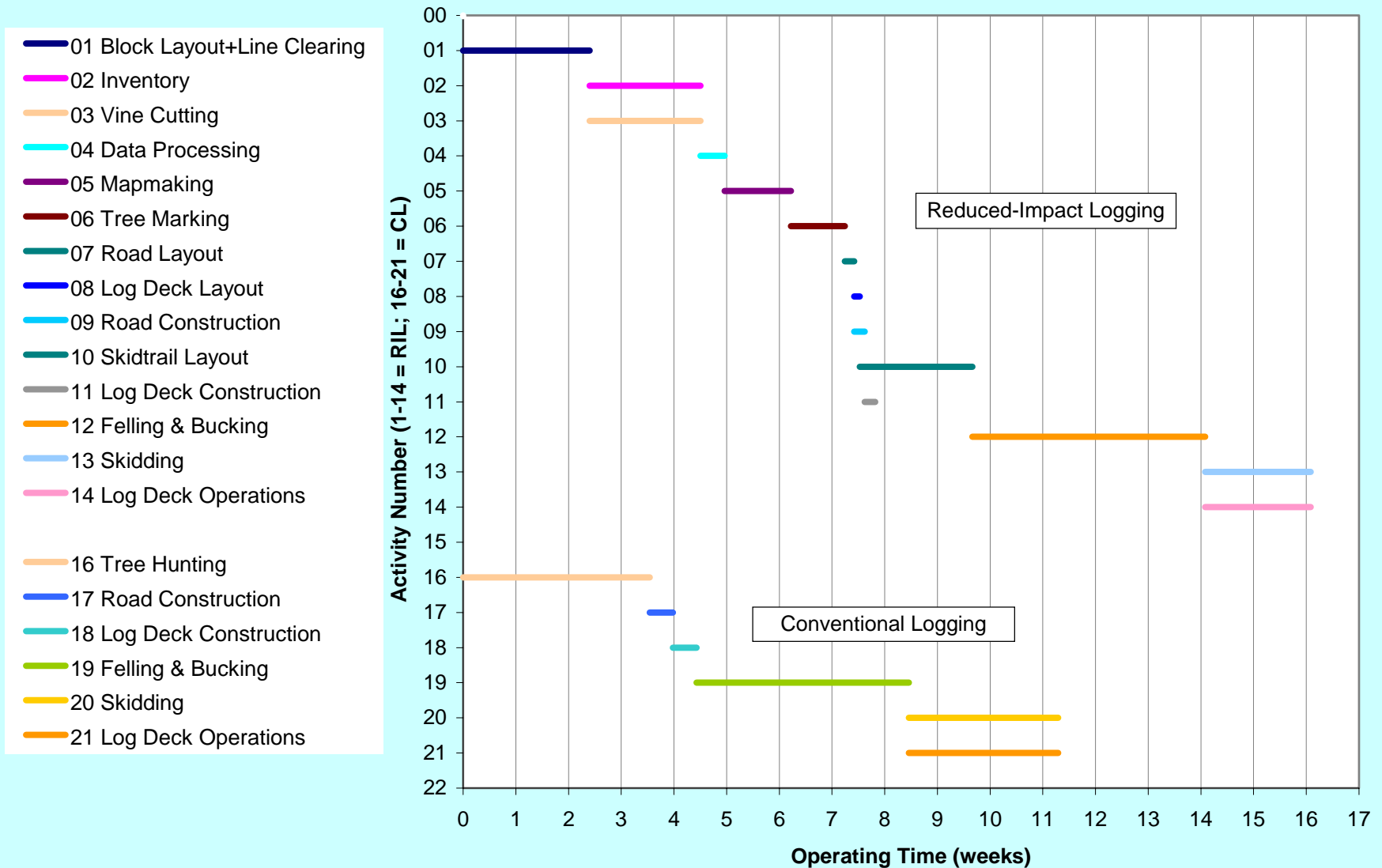
# Extending RILSIM with a Spreadsheet

Bar Chart--Comparing RIL and CL Costs for the TFF Sample Problem



# Extending RILSIM with a Spreadsheet

## Gantt Chart--RIL and CL Timelines for the TFF Sample Problem



# Conclusion



- RILSIM is financial-analysis simulation software designed to promote the adoption of reduced-impact logging
- The initial distribution of RILSIM, on CD-ROM and with a printed User's Guide, will be handled through RILNET, a service of the Asia-Pacific Forestry Commission
- A downloadable version of RILSIM is available from <http://www.blueoxforestry.com/RILSIM>. There is no cost but the download is 8.26 Mbytes