

# Sustainable Forest Management

Board of Natural Resources

Special Meeting February 17<sup>th</sup> 2004

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# Elements of a Potential Preferred Alternative

# Elements of the Potential Preferred Alternative: Policy and Procedure changes

## Key Policy Features:

1. **Sustainable Timber harvest flow** – Forest Resource Plan Policy No. 4 – Modulating even-flow: a policy objective of allowing the timber harvest flow (volume) not to vary more than a +/- 25% on a inter-decade basis.
2. **Timber harvest levels** – Forest Resource Plan Policy No. 5 – Value: a policy objective of maximizing the value of the harvest from the on-base forest acres subject to other policy objectives and constraints.
3. **Westside Ownership Groups (or Sustainable Harvest units)** - Forest Resource Plan Policy No. 6 - 20 units – Federally granted State Trust forest lands and Forest Board Purchase Trust forest lands are placed in one westside sustainable harvest unit; Forest Board Transfer State Trust lands are divided into seventeen counties units; and State Trust lands in the Olympic Experimental Forest and Capital Forest are placed into two sustainable harvest units.
4. **Managing On-base lands** - Forest Resource Plan Policy No. 11 – a policy objective of maintaining as much trust land on-base as allowable by law (including the HCP) and employing innovative management techniques (different silvicultural techniques) that seek to combine resource protection, sensitivity to cultural and local issues, and revenue generation activities across DNR managed landscapes.
5. **Forest Conditions for determining when stands are regenerated** – No policy changes are proposed – the policy objective is an average rotation age of 60 years or greater across the forest.
6. **Biodiversity pathways** - Forest Resource Plan Policy No. 30 & 31 – a policy objective to reflect the use of silviculture to create, develop, enhance and/or maintain forest biodiversity and health. The objective of silviculture based on biodiversity pathways principles (Carey et al. 1996) is for simultaneous increases in production of both habitat and income. The policy priority is on habitat designated areas: riparian, spotted owl management areas and other upland areas with specific management objectives).
7. **Older Forest** –Forest Resource Plan Policy No. 14 – a policy objective that targets the development of 10 to 15 percent of each westside HCP Planning Unit as older forests based on structural characteristics.

## Elements of the Potential Preferred Alternative: Policy and Procedure changes

### Key Procedure Features:

8. **Maintaining mature forest components** – procedure revised to remove 50/25 WAU strategy.
9. **Northern Spotted Owl management** – procedure revised to reflect release of Administrative Owl circles (Status-1-Reproductive and Southwest Washington circles) in 2007, use of HCP owl management strategies and the priority of biodiversity management in northern spotted owl management areas (OESF, NRF and dispersal management areas).
10. **Riparian management** – procedure to be finalized with consultation with the Federal Services. Board policy is that riparian management zone will be actively managed with innovative silviculture at appropriate moderate levels (similar in area under treatment to Alternative 2 outcomes) for conservation benefits and revenue generation.
11. **Legacy and reverse tree** procedure will be updated to reflect HCP strategy of maintaining a minimum of 8 trees per acre in regeneration harvest stands.

### Other considerations

12. **Base silviculture** for uplands with general objectives and uplands with specific objectives to reflect “Current DNR” (Alternative 2) focus on economic potential subject to other objectives such as habitat. Constrained by costs.
13. On-base for 2004 estimated at 877,000 acres

**Matrix: Background Reference Material for Policy Choices**  
 Compared to current conditions and Alternative 1 future projections

Policy Issues	Alternative	Outcomes									
		Revenue		Income variability	Amount of Structurally Complex forest beyond that required by the HCP	Implementation		Long-term standing inventory increases under Alt. 1	Likely environmental risks and social benefits of land managed in the urban-rural interface		
		Near-term	Long-term			Costs	Timing		Environmental	Socio-economic	
<b>Volume &amp; Value</b>											
1	Volume	1,2,3,4	same	same	neutral	neutral	same	same	neutral	same	same
	Value	5,6	positive	positive	neutral	neutral	increase	delay	neutral	increase	increase
<b>Silviculture</b>											
3	DNR current Silviculture	1, 2, 3	same	same	neutral	same	same	same	same	same	same
4	Minimum Silviculture	4	negative	same	neutral	increase	decrease	immediate	increase	decrease	decrease
5	Intensive Silviculture	5, 6	positive	positive	neutral	same	increase	delay	same	increase	increase
6	Bio Diversity	6	positive	positive	neutral	increase	increase	delay	same	decrease	increase
<b>Timber Harvest Flow</b>											
7	Even-flow	1,4	same	same	same	neutral	neutral	neutral	neutral	same	same
8	Relative Non-declining	2	Slight "+"	same	same	neutral	neutral	neutral	neutral	same	same
9	Relatively Unconstrained	3	Big "+"	same	Big "+"	neutral	neutral	neutral	neutral	increase	increase
10	Modulating	5,6	Big "+"	same	Slight "+"	neutral	neutral	neutral	neutral	increase	increase
<b>Ownership Groups</b>											
11	24	1,2,4	same	same	same	neutral	neutral	neutral	neutral	same	same
12	20	3,5,6	Slight "+"	same	Slight "+"	neutral	neutral	neutral	neutral	same	same
13	1	3	Big "+"	same	Big "+"	neutral	neutral	neutral	neutral	increase	increase
<b>Available "On-base" land</b>											
14	Maintain procedures & deferrals	1	negative	negative	neutral	Slight "+"	decrease	immediate	increase	same	same
15	Change procedures & deferrals	3,4,5,6	Slight "-"	positive	neutral	neutral	decrease	immediate	neutral	increase	increase
16	Change procedures	2	positive	positive	neutral	neutral	increase	immediate	neutral	increase	increase
<b>Older Forests</b>											
17	Basic Protection Only	1,2,3	neutral	neutral	neutral	neutral	neutral	neutral	neutral	neutral	neutral
18	Specific site Protection	4	neutral	neutral	neutral	neutral	neutral	neutral	neutral	neutral	neutral
19	landscape Targets	5,6	neutral	neutral	neutral	neutral	neutral	neutral	neutral	neutral	neutral
<b>Riparian Management</b>											
20	No management	1,4	neutral	neutral	neutral	neutral	neutral	neutral	increase	same	same
21	Moderate Management	2,3,5	Slight "+"	Slight "+"	neutral	neutral	neutral	delay	neutral	same	same
	Intensive Management	6	positive	positive	neutral	increase	increase	delay	neutral	increase	increase

## **Current vs. Potential Preferred Alternative**

<b>Alternative</b>	<b>Current (Alt. 1)</b>	<b>Potential Preferred Alt.</b>
<b>Total Agency Aver. Annual Costs</b> <small>(1<sup>st</sup> decade: in millions operating &amp; capital)</small>	<b>\$51</b>	<b>\$80</b>
<b>Total Volume: EWA+WWA</b> <small>(millions BF)</small>	<b>476</b>	<b>716</b> <small>(WWA 635)</small>
<b>Net Annual Revenue to Beneficiaries</b> <small>1<sup>st</sup> decade: Timber &amp; non- timber, millions \$</small>	<b>\$109</b>	<b>\$158</b>
<b>Net Present Value: WW Timber only over life of HCP, 64 years, millions \$</b>	<b>1,854</b>	<b>\$3,622</b>

Preferred Alternative is mix'n'match of Alternative 2 and 6 as outlined on pages 4 and 5.

# **Additional Information on Implementation Considerations**



## Background Information on Implementation *Transition & Implementation*

The key goals of any Preferred Alternative should be:

- Protecting the productivity capacity of the trusts and,
- Increasing the net return to the beneficiaries

Protecting the productivity capacity of the trusts is achieved by:

- A new policy for creating and maintaining healthy forest conditions through innovative silviculture using biodiversity pathways principles

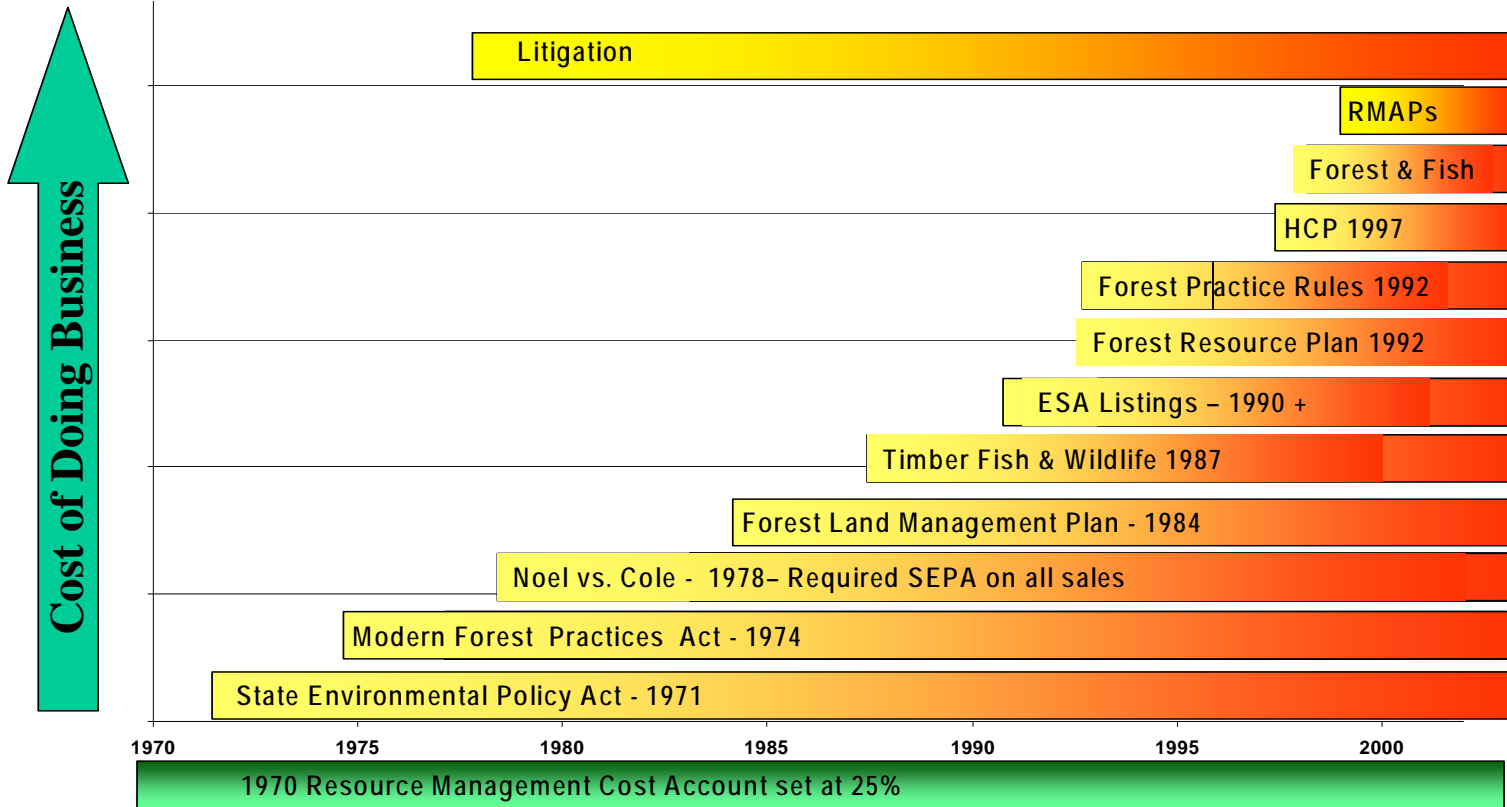
Increasing the net returns to the beneficiaries is achieved by:

- Increasing gross revenues from the forest management programs

However, implementing innovative silviculture will increase costs. These increases will join the already increased costs of doing business that have resulted from changes in the legal and social environment over the last 30 years

## Changes in the Department's business environment since 1970

### Department of Natural Resources: Changes That Impact The Cost of Doing Business



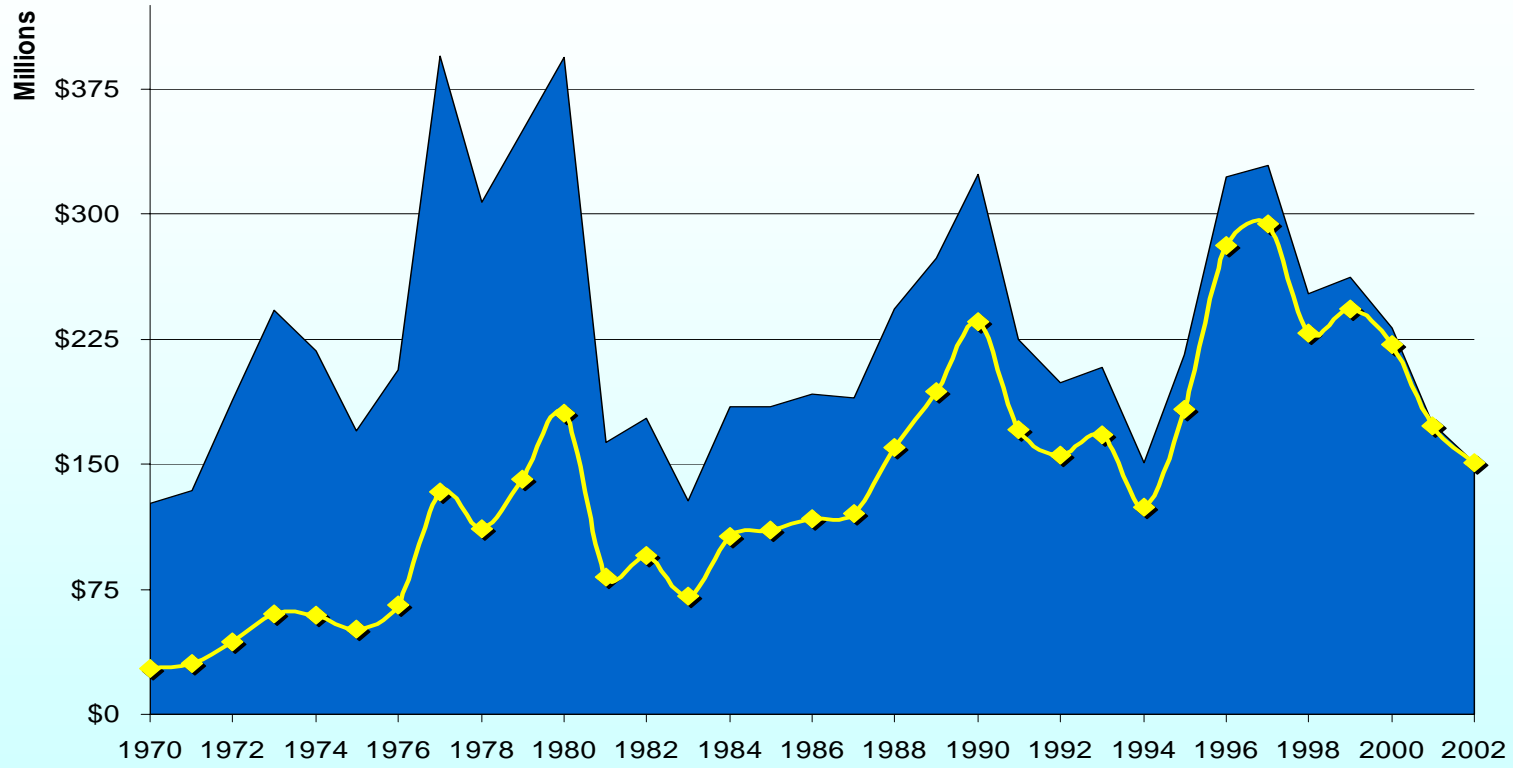
DRAFT: Subject to changes and amendments over time 08/26/02



Accumulating regulatory rules (e.g. Forest Practices and SEPA) and policy objectives have increased the costs of doing business beyond the “typical” operating costs of silviculture

# Timber Revenue (Removed Basis)

Department of Natural Resources: 10/22/02



Real values adjusted to June 2002 Values  
Consumer Price Index - Lumber - Bureau  
of Labor Statistics

REAL VALUES NOMINAL

While the authorizing environment has had the effect of increasing the Department's expenditures, revenues from timber harvests have not kept pace with these increasing costs.

# Recent Department Performance

## *Transition & Implementation Issues*

Over the past four years, the Department has reduced expenditures and increased productivity

### RMCA & FDA Expenditures

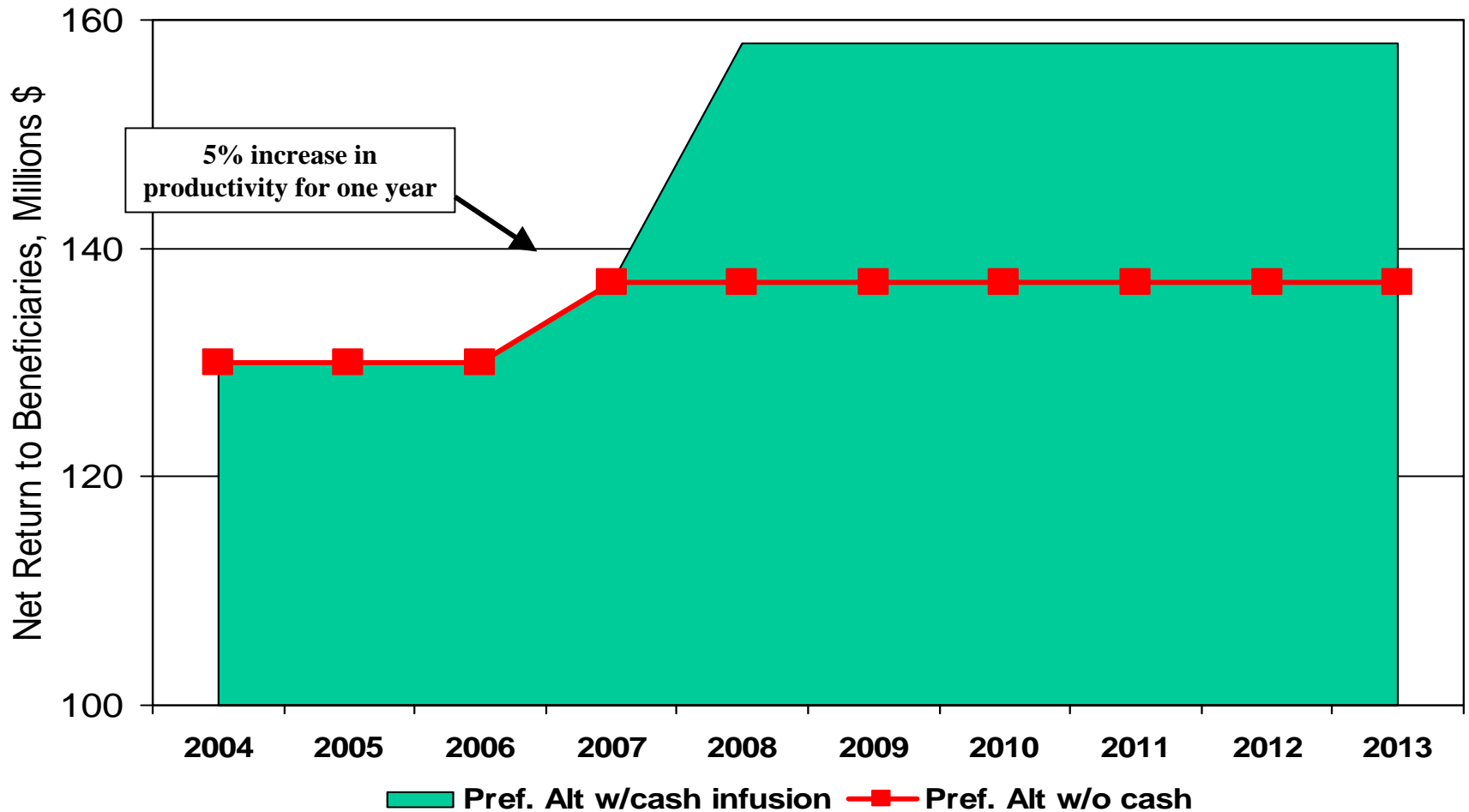
- **FY 2001 = \$62.3M**
- **FY 2004 = \$51.1M**
- **With 15% fewer FTE's, productivity increased 40+%**
- Fund balances continued to drop even in the face of major cost containment efforts and significant increases in labor productivity
- Most gains have been achieved, although, additional limited gains are possible from greater policy flexibility

**To achieve the goals of the preferred alternative:**

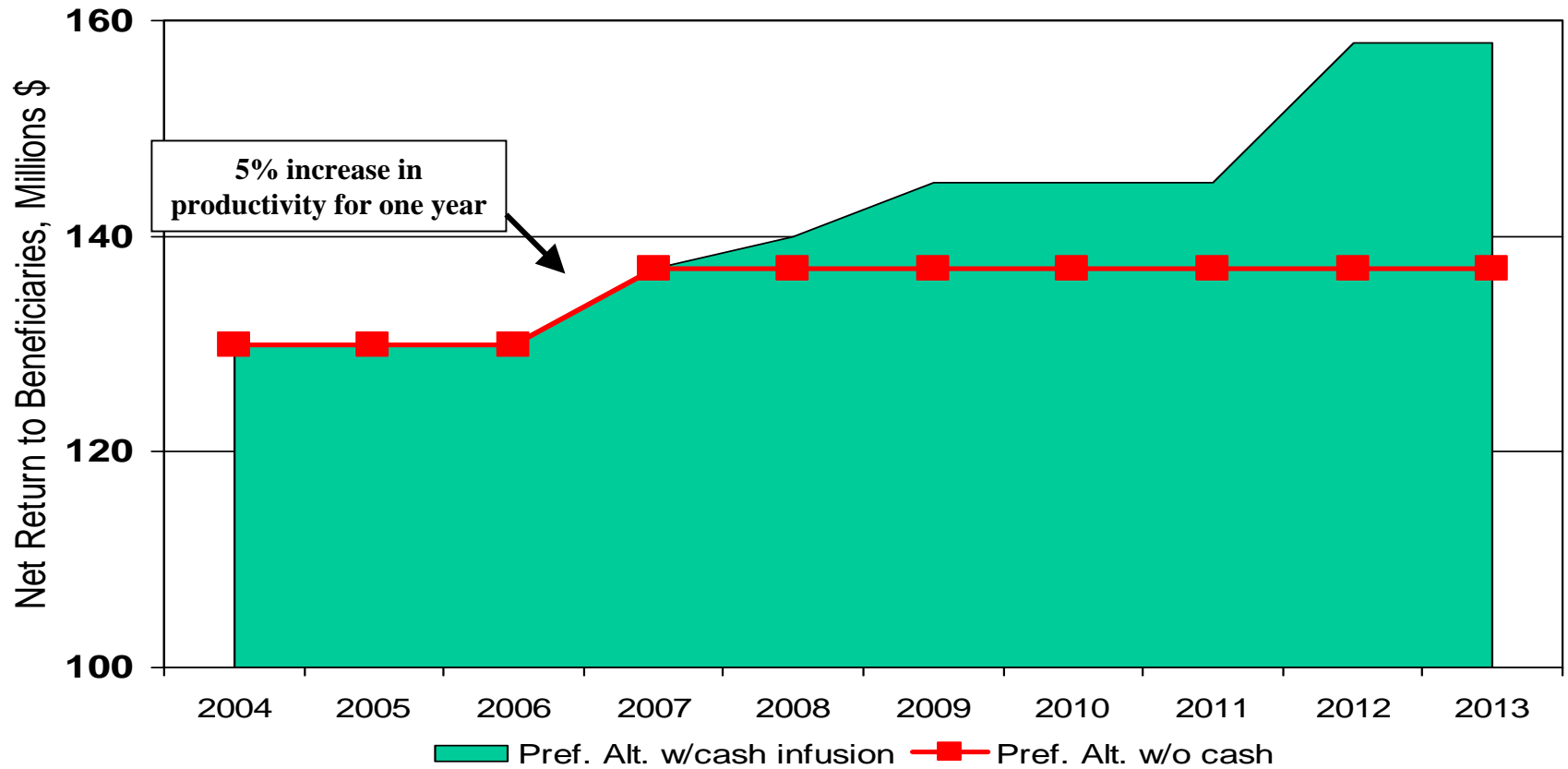
- **An increase gross revenues, and**
- **An increase in investments are needed.**

Cashflow and Return on Investment: "Loan" w/o debt retirement

The return is the difference between the red line and the top of the green curve. If it was assumed that a \$30 million "loan" was used, then the beneficiaries would receive an additional \$126 million, about a 4-fold return within the 1<sup>st</sup> decade. The second decade increase is \$210 million



# Cashflow and Return on Investment: Loan with debt retirement



# **Reference Material: Additional Board Runs Results**

# Board Requested Model Runs

## Variation of Alternative 5

- A. Use flow control as in Alt. 3, lower maturity criteria by 5 years and increase silvicultural investments

## Variations of Alternative 6

- A. Alt. 6A applies:
  - flow control as in Alt. 3
  - Variable density thinnings across entire land base
  - reduced activities in riparian areas.
- B. Alt.6B as Alt6A, however use one ownership group.

## Variations combined elements of Alt. 6 and Alt 2

Potential Preferred Alternative as Alt. 6 except applies:

- silvicultural investment as in Alt. 2 (DNR current) to uplands with general management objectives:
- Variable density thinnings on uplands with specific objectives and riparian areas.
- limits activities in riparian areas similar to Alt. 2

As Potential Preferred Alternative with management costs constrained at 25% of gross revenue

**Management costs are constrained using the following assumptions:**

- Current Gross Revenue sufficient to cover necessary Department's variable and fixed costs for Westside timber harvest
- Achieving a higher level of harvest from current (470 MMBF for Westside) will result from increased labor productivity and/or increased expenditures (capital)
- Today, Department does not have any access to surplus capital, therefore any increase in expenditures must be preceded by an increase in gross revenues as a result of increased labor productivity



## Summary of Additional Board Requested Runs Harvest Analysis - (First Decade)

Run Label	5A	6A	6B	Potential Pref Alt.	A run attempting to constrain mgmt costs
<b>Westside Harvest</b>					
<b>Volume (MMBF)</b>					
Regeneration	523	472	667	532	406
Uplands Variable Density Thinning	18	13	3	22	1
Traditional Thinning	54	30	10	3	
Riparian	51	24	13	79	12
<b>Total</b>	<b>646</b>	<b>538</b>	<b>693</b>	<b>636</b>	<b>419</b>
<b>Area (acres/yr)</b>					
Regeneration	15,284	13,081	18,521	14,337	11,155
Uplands Variable Density Thinning	1,520	983	276	1,317	61
Traditional Thinning	16,659	9,245	4,355	425	
Riparian	2,859	4,895	2,178	3,052	416
<b>Total</b>	<b>36,322</b>	<b>28,204</b>	<b>25,330</b>	<b>19,131</b>	<b>11,632</b>

**Notes:**

These runs contain updated yield guide curves and utilization factors (used to convert estimated forest stand values to estimated merchantable board feet). Comparisons between the these runs and the DEIS will be complicated by this difference in yields, utilization factors and modeling assumptions.

Upland variable density thinning treatments represent heavy thinnings where forest stands can have up to 50% of their standing basal area removed. Traditional thinnings are lighter thinnings, where up to 30% of the basal area can be removed.

Riparian treatment are assumed to be variable density thinnings

## Summary of Additional Board Requested Runs Financial Analysis - (First Decade)

Run Label	5A	6A	6B	Potential Pref Alt.	A run attempting to constrain mgmt costs
<b>Westside Harvest</b>					
<b>Revenue</b> (\$ millions)					
Regeneration	170.1	153.8	216.0	169.0	140.4
Uplands Variable Density Thinning	5.1	3.6	0.9	6.3	0.3
Traditional Thinning	8.0	4.5	1.5	0.8	
Riparian	14.6	4.8	3.2	22.6	3.7
<b>Total</b>	<b>197.8</b>	<b>166.8</b>	<b>221.6</b>	<b>198.7</b>	<b>144.4</b>
<b>Gross Revenue</b>					
Westside Total	\$197.8	\$166.8	\$221.6	\$198.7	\$144.4
Eastside Total	\$19.5	\$19.5	\$19.5	\$19.5	\$19.5
Non-Timber Total	\$19.3	\$19.3	\$19.3	\$19.3	\$19.3
<b>Total Gross Revenue</b>	<b>\$236.6</b>	<b>\$205.7</b>	<b>\$260.5</b>	<b>\$237.6</b>	<b>\$183.3</b>
<b>Total Costs</b>	<b>\$87.4</b>	<b>\$71.1</b>	<b>\$74.1</b>	<b>\$74.4</b>	<b>\$59.9</b>
<b>Net Revenue Total</b>	<b>\$132.2</b>	<b>\$132.0</b>	<b>\$181.3</b>	<b>\$157.7</b>	<b>\$123.4</b>
Total Costs as % of Gross Revenue	37%	35%	28%	31%	33%
WWA Net Present Value (over life of HCP, \$ millions)	\$3,062	\$2,789	\$2,948	\$3,622	\$3,233

# Board Requested Model Runs- Some Lessons Learned

## Lesson learned

- Most of the runs will produce a long-term harvest level of around 650 MMBF/year or \$200 millions in gross revenues under current prices, if the models are not constrained.
- Main factors that could constrain a model appear to be:
  - Amount of on-base land
  - Sustainable Even-Flow
  - Sustainable harvest groups
  - The type of silviculture and future yields and,
  - The condition of the current forest resource
- There appears to be a limited amount of the forest base that is suitable for heavy variable density thinning that would lower stand density substantially under a biodiversity pathways model. Current forest conditions indicate a greater portion of the forest base consists of densely stocked tall stands and suggests a pathway of lighter variable density thinnings would be a prudent strategy for increasing forest diversity and improving forest health. However, the economic feasibility of such light thinnings will be much more market dependent than heavier thinnings and regeneration harvests.
- There appears to be flexibility in actually how the preferred alternative can be implemented on the landscape. The flexibility comes from a relative high standing inventory and a more flexible policy framework of objectives and constraints.
- Our attempts to constrain activities and allocate harvest types to achieve a management cost of 25% of gross revenue have been unsuccessful to-date with the potential Preferred Alternative model. To achieve a management cost of 25%, two variables need to align using current assumptions: gross revenues need to be in the \$200 million range and costs need to be constrained at approximately \$50 million. To achieve this, a model with substantial regeneration harvests volume and limited thinning is required: the first decade modeling outputs of Alternative 3 provide an example.