



Pacific Southwest Region Reforestation Optimization

Balancing site preparation, planting and vegetation control
acres, funding, capacity

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What is different in this Presentation

- Reforestation Need Acres
- Cost constraints that limit reforestation
- Workforce capacity constraints that limit Reforestation

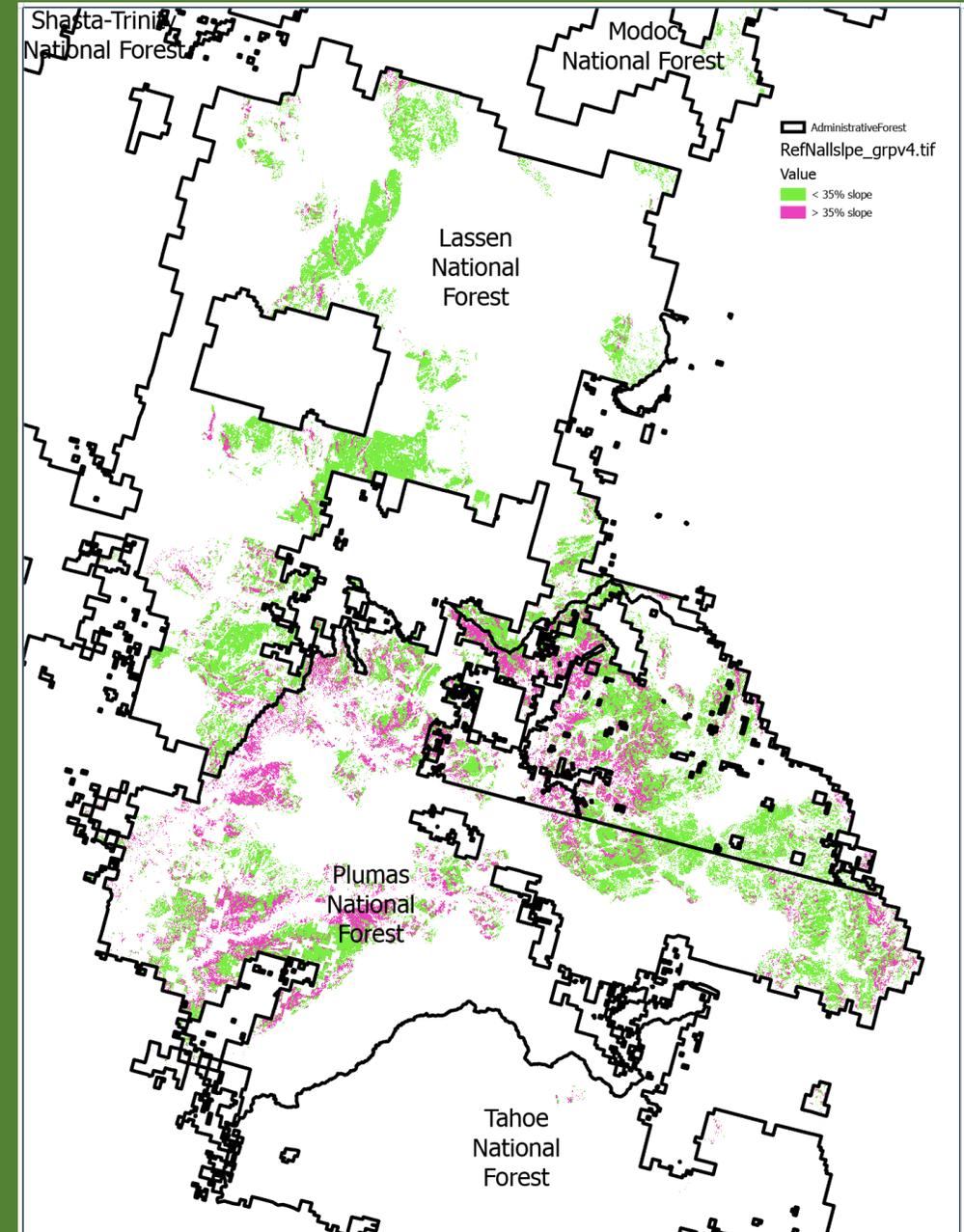
Reforestation Need Assumptions

- Need from years 2000 to 2021
- Removed surviving plantations shown in FACTS
- Used the latest RAVG product for each year
- Used Basal Area loss categories with more than 50% basal area loss
- Selected Forest Service Lands on suitable land base
- Limited to conifer dominated forest types (LEMMA FIA imputation)
- Used R5 site productivity to limit need
- This is not a priority list

Reforestation Needs By Forest

the number of acres of National Forest System land affected by, and the substance of reforestation needs on that land resulting from, unplanned events; and (4) the number of acres in need of reforestation under subsection (e)(1) of section 3 of the Forest and Rangeland Renewable Resources Planning Act of 1974 (16 U.S.C. 1601).

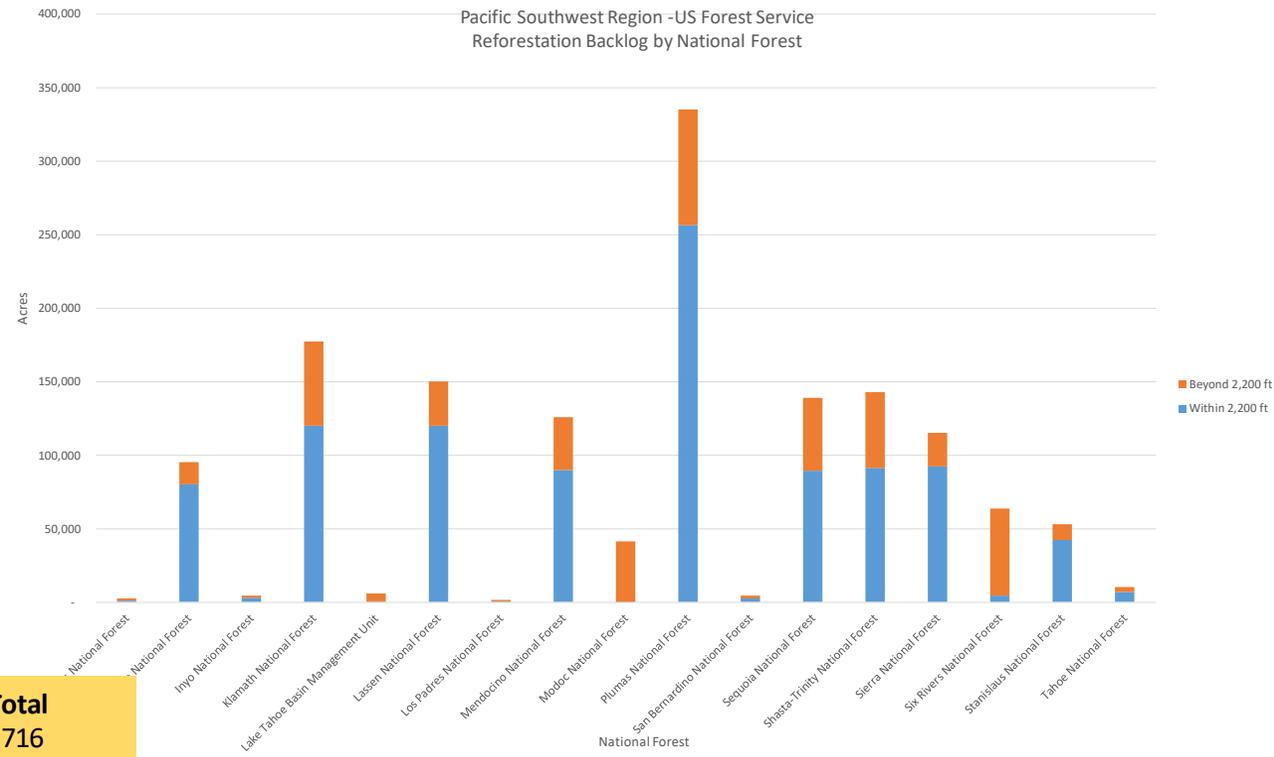
the amount and location by forests and States and by productivity class, where practicable, of all lands in the National Forest System where objectives of land management plans indicate the need to reforest areas that have been cut-over or otherwise denuded or deforested, and all lands with stands of trees that are not growing at their best potential rate of growth.



2000 to 2021 reforestation
Need ~ 1.5 million Acres

Within 2,200 feet of a road ~1
million acres

~ 220,000 acres occurred in
years 2000 to 2009

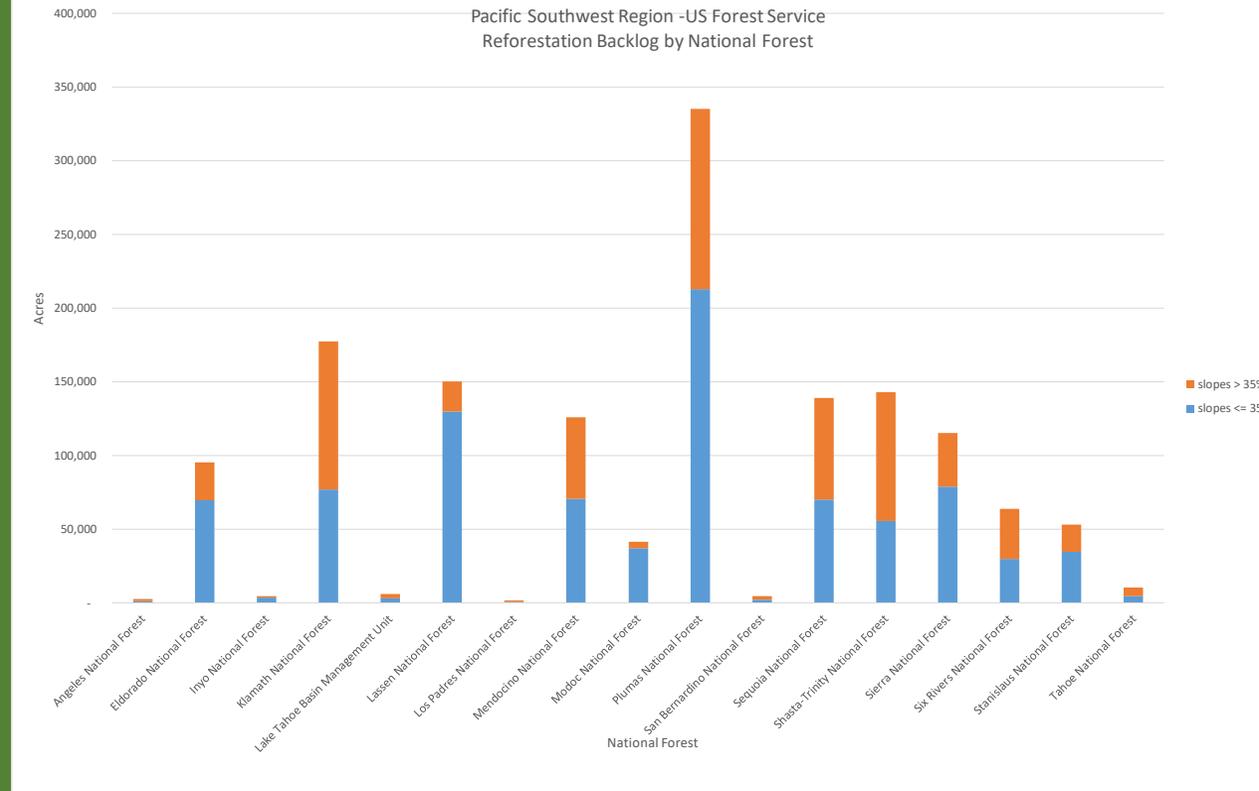


Unit	Within 2,200 ft	Beyond 2,200 ft	Grand Total
Angeles National Forest	887	1,829	2,716
Eldorado National Forest	80,019	15,379	95,398
Inyo National Forest	3,121	1,603	4,723
Klamath National Forest	120,097	57,016	177,113
Lake Tahoe Basin Management Unit	674	5,327	6,002
Lassen National Forest	120,278	29,656	149,934
Los Padres National Forest	588	1,198	1,786
Mendocino National Forest	89,788	36,027	125,816
Modoc National Forest	360	40,848	41,208
Plumas National Forest	256,437	78,649	335,085
San Bernardino National Forest	2,822	1,792	4,614
Sequoia National Forest	89,636	49,262	138,898
Shasta-Trinity National Forest	91,497	51,322	142,819
Sierra National Forest	92,421	23,024	115,445
Six Rivers National Forest	4,597	58,924	63,521
Stanislaus National Forest	42,213	10,950	53,163
Tahoe National Forest	6,893	3,513	10,406
Grand Total	1,002,329	466,318	1,468,647

Total 20-year
reforestation
backlog ~ 1.5 million
Acres

Less than 35% slope
~ 880,000 acres

Row Labels	slopes <= 35%	slopes > 35%	Grand Total
Angeles National Forest	982	1,734	2,716
Eldorado National Forest	69,477	25,921	95,398
Inyo National Forest	3,598	1,125	4,723
Klamath National Forest	76,908	100,205	177,113
Lake Tahoe Basin Management Uni	3,292	2,710	6,002
Lassen National Forest	130,005	19,929	149,934
Los Padres National Forest	870	916	1,786
Mendocino National Forest	70,401	55,415	125,816
Modoc National Forest	37,187	4,022	41,208
Plumas National Forest	213,029	122,056	335,085
San Bernardino National Forest	2,275	2,339	4,614
Sequoia National Forest	69,885	69,014	138,898
Shasta-Trinity National Forest	55,369	87,450	142,819
Sierra National Forest	78,604	36,840	115,445
Six Rivers National Forest	29,631	33,890	63,521
Stanislaus National Forest	34,434	18,728	53,163
Tahoe National Forest	4,630	5,776	10,406
Grand Total	880,576	588,070	1,468,647

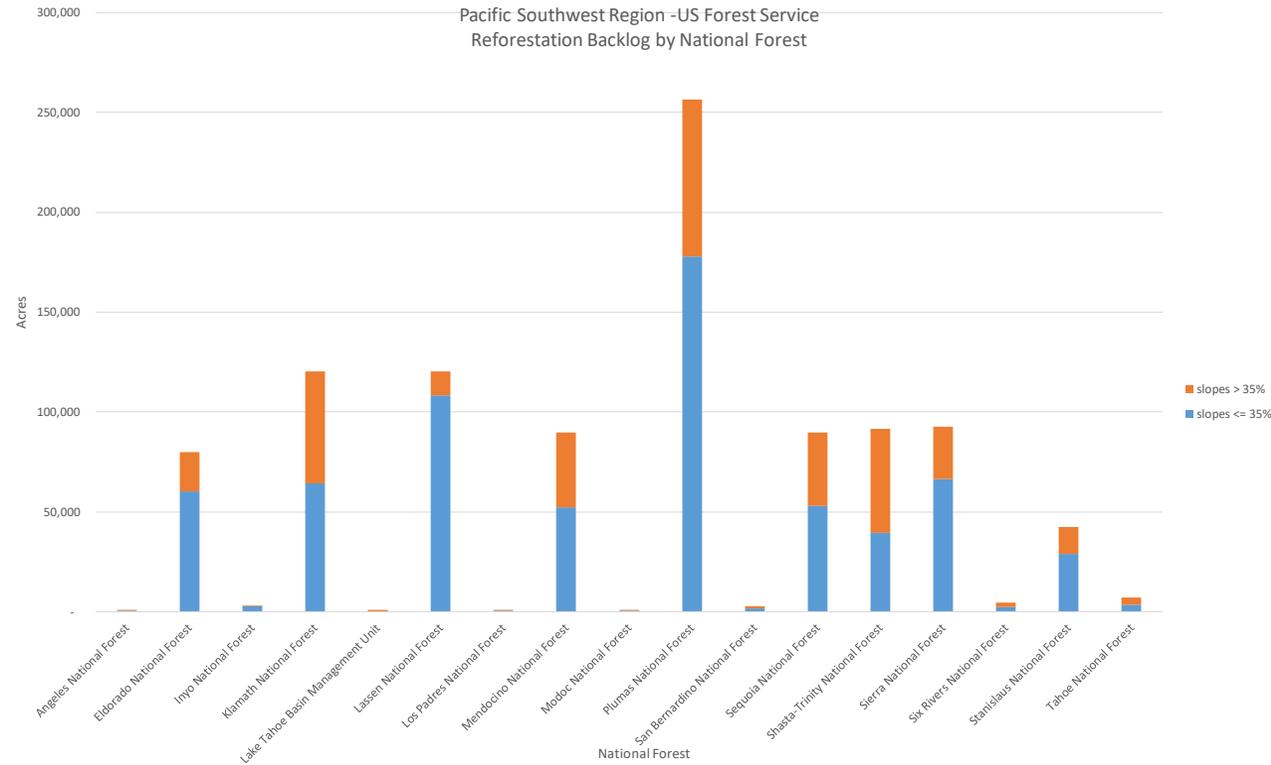


Total 20-year reforestation backlog ~ 1.5 million Acres

Within 2,200 ft of a road ~1 million acres

Less than 35% slope ~ 880,000 acres

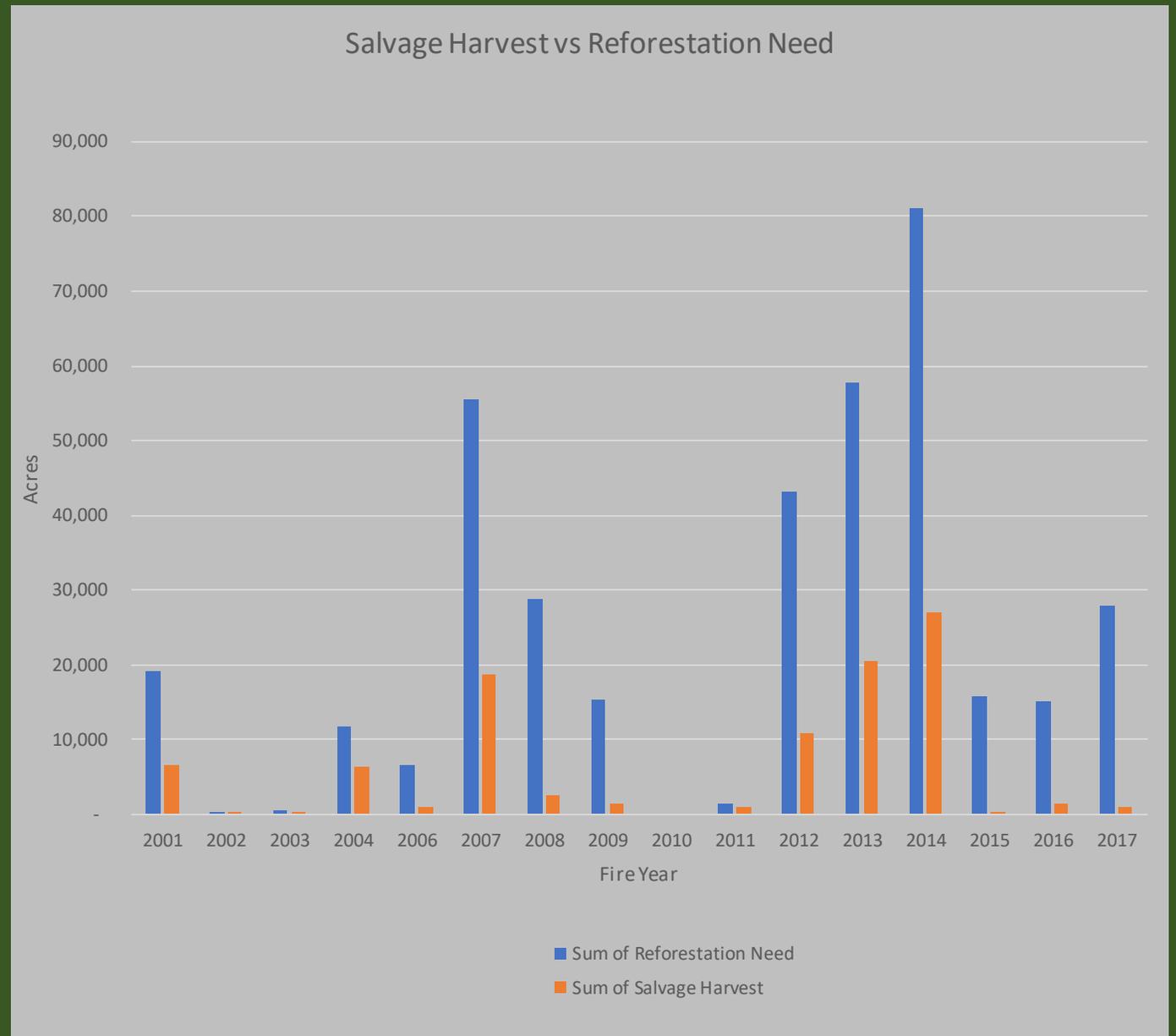
Less than 35% slope and within 2,200 ft of a road ~ 660,000



Unit	slopes <= 35%	slopes > 35%	Grand Total
Angeles National Forest	460	427	887
Eldorado National Forest	60,267	19,752	80,019
Inyo National Forest	2,649	471	3,121
Klamath National Forest	64,227	55,870	120,097
Lake Tahoe Basin Management Unit	228	447	674
Lassen National Forest	108,084	12,194	120,278
Los Padres National Forest	317	272	588
Mendocino National Forest	52,154	37,634	89,788
Modoc National Forest	340	20	360
Plumas National Forest	177,778	78,659	256,437
San Bernardino National Forest	1,522	1,301	2,822
Sequoia National Forest	52,923	36,713	89,636
Shasta-Trinity National Forest	39,432	52,066	91,497
Sierra National Forest	66,470	25,951	92,421
Six Rivers National Forest	2,298	2,299	4,597
Stanislaus National Forest	28,859	13,353	42,213
Tahoe National Forest	3,226	3,667	6,893
Grand Total	661,234	341,096	1,002,329

Approximately 20% of acres Needing reforestation salvaged 2001 to 2017 Region 5

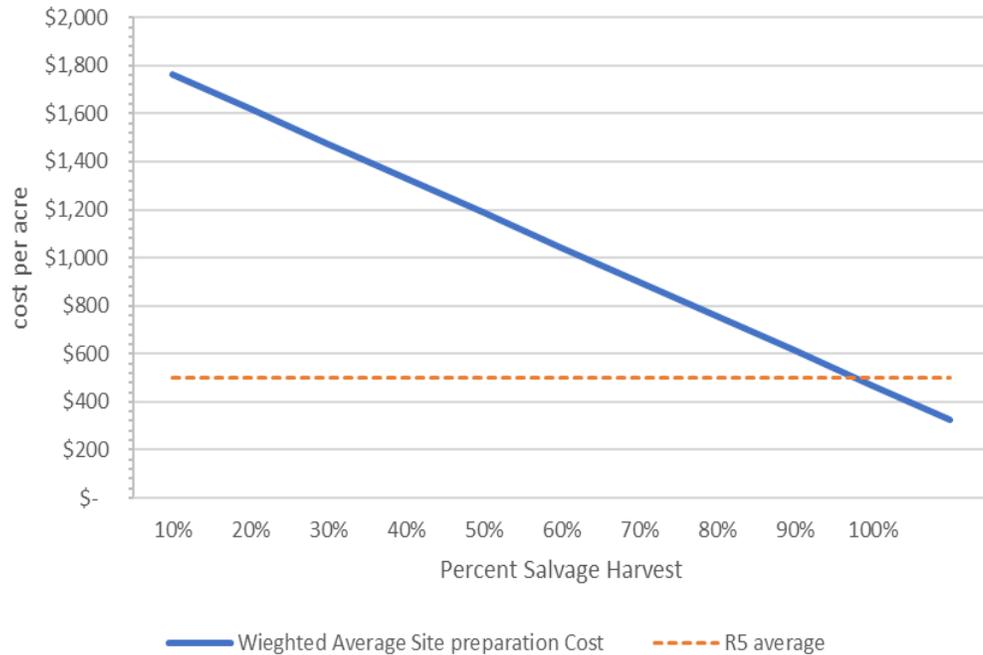
Salvage reduces site preparation costs,



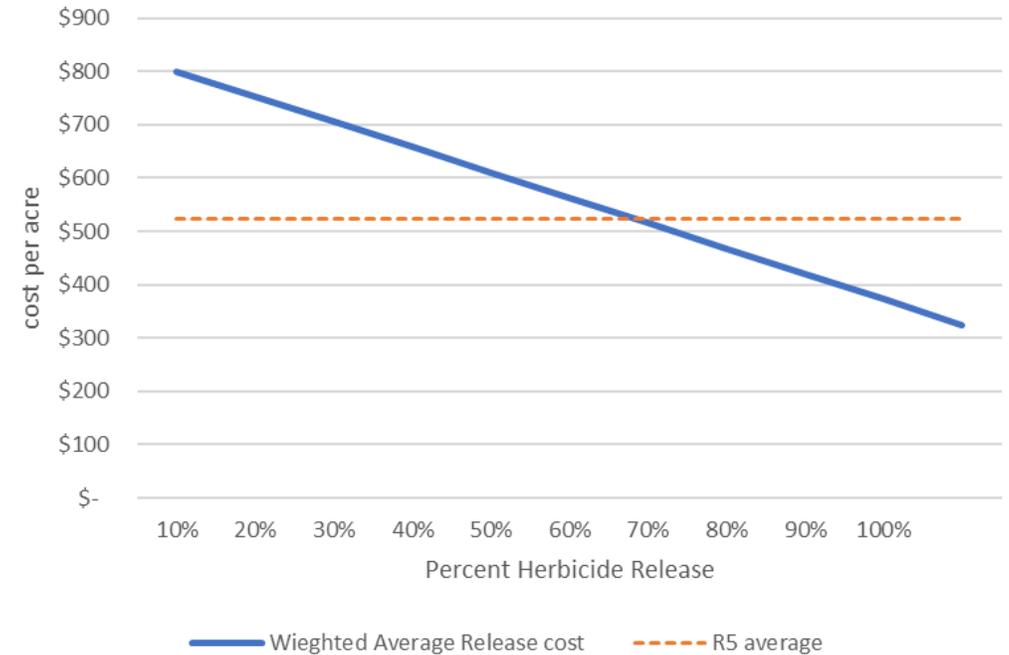
Regional costs are driven by acres salvaged and release methods

- As the percent of acres receiving salvage and herbicide increase, cost per acre decline

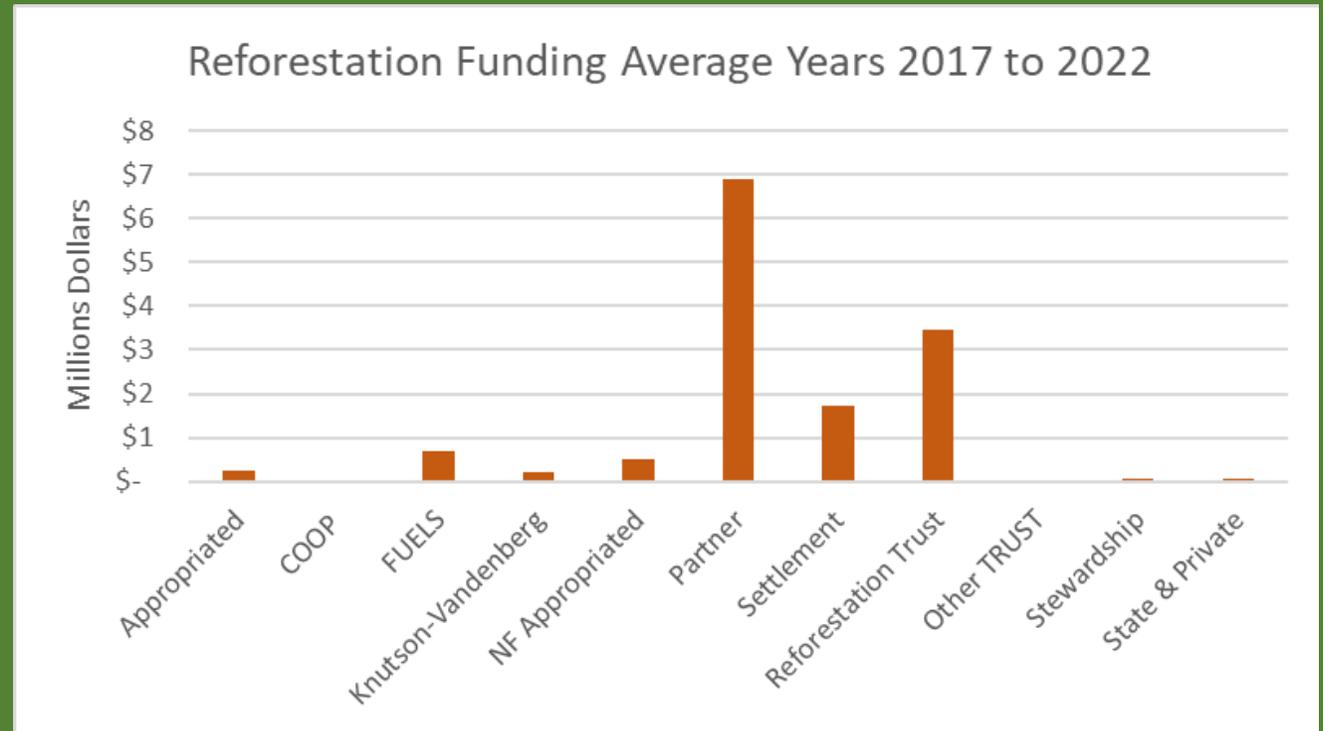
Wiegthed Average Site Preparation Cost



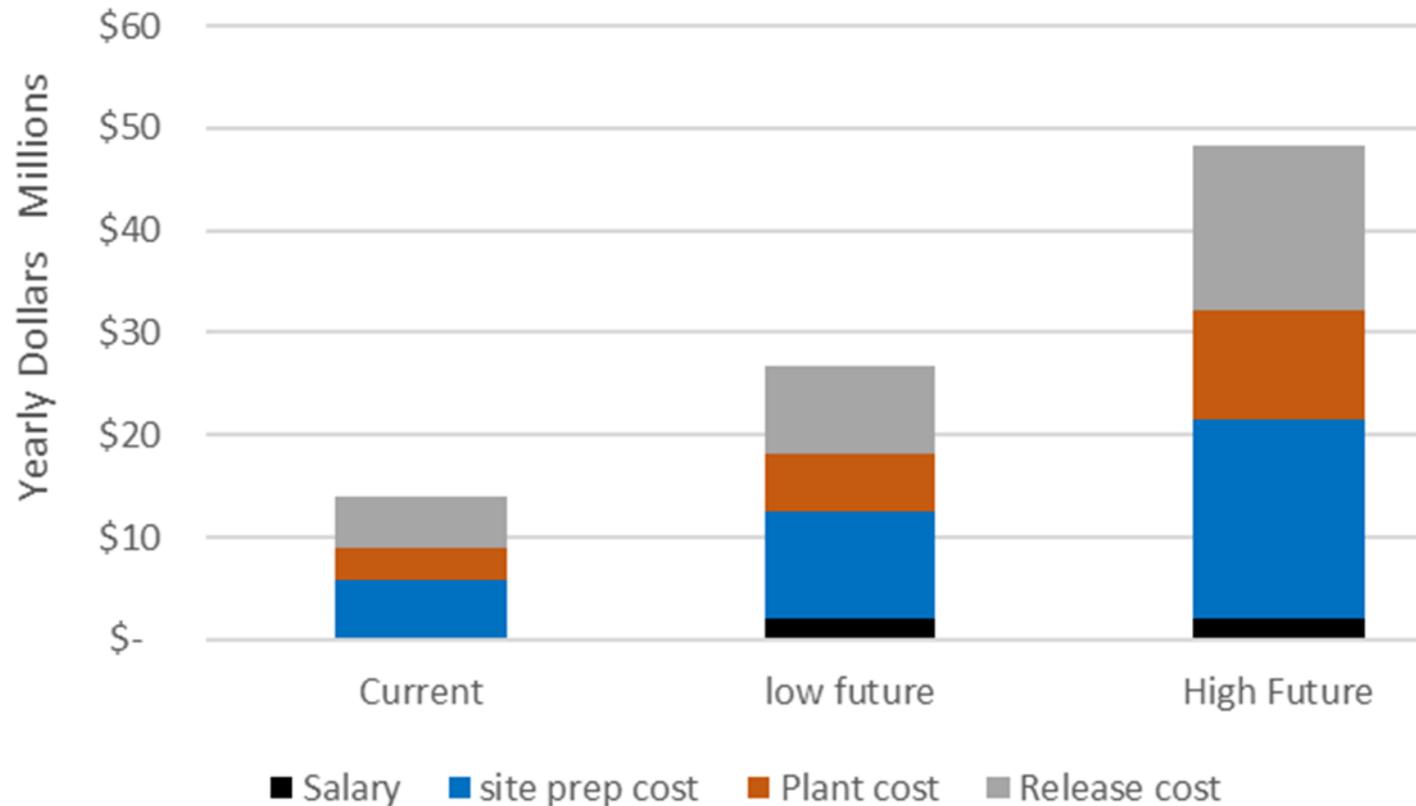
Wiegthed Average Release Cost



- Current average yearly reforestation funding is ~\$14 million
- Various funding sources are used to accomplish reforestation
- Partner, Settlement, and reforestation trust fund dollars dominate funding



Reforestation Funding Scenarios

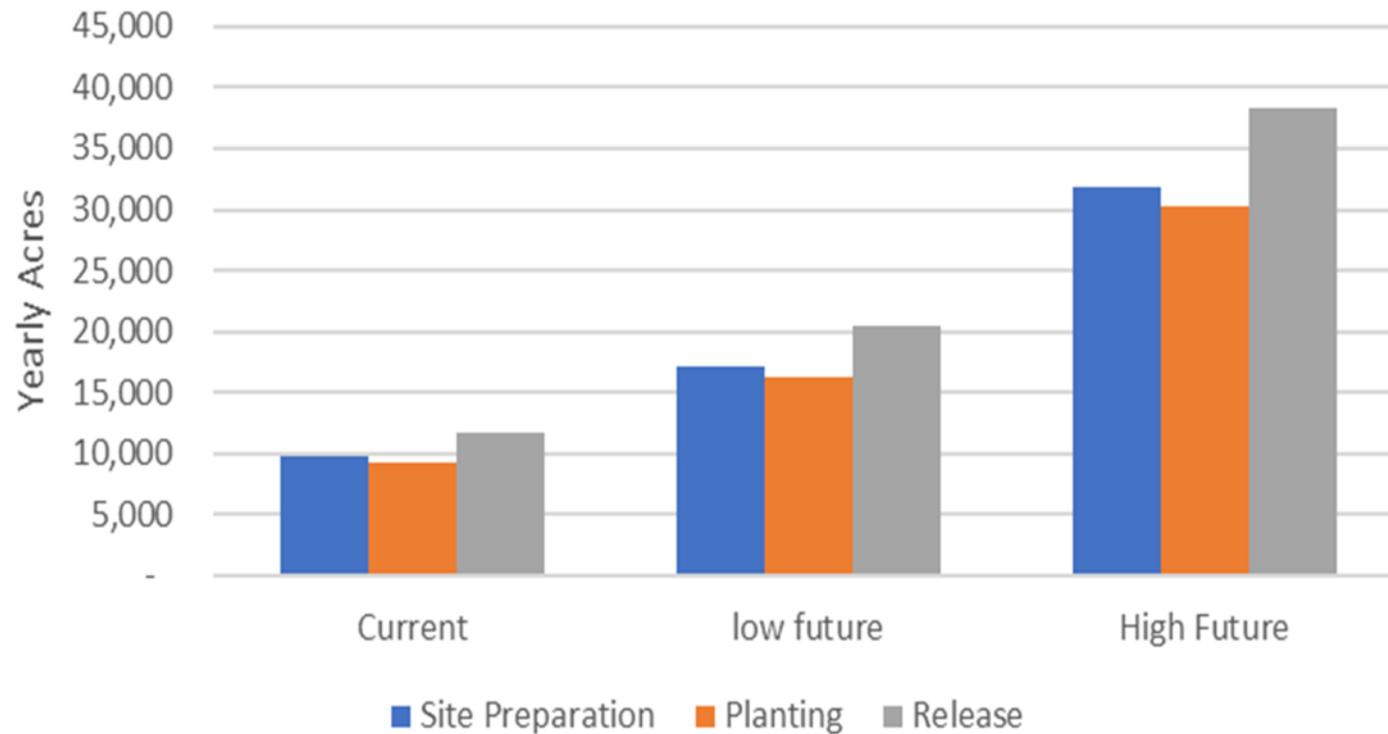


Increased funding will likely fall between Low and High future scenarios

Planting cost include cone collection & field surveys

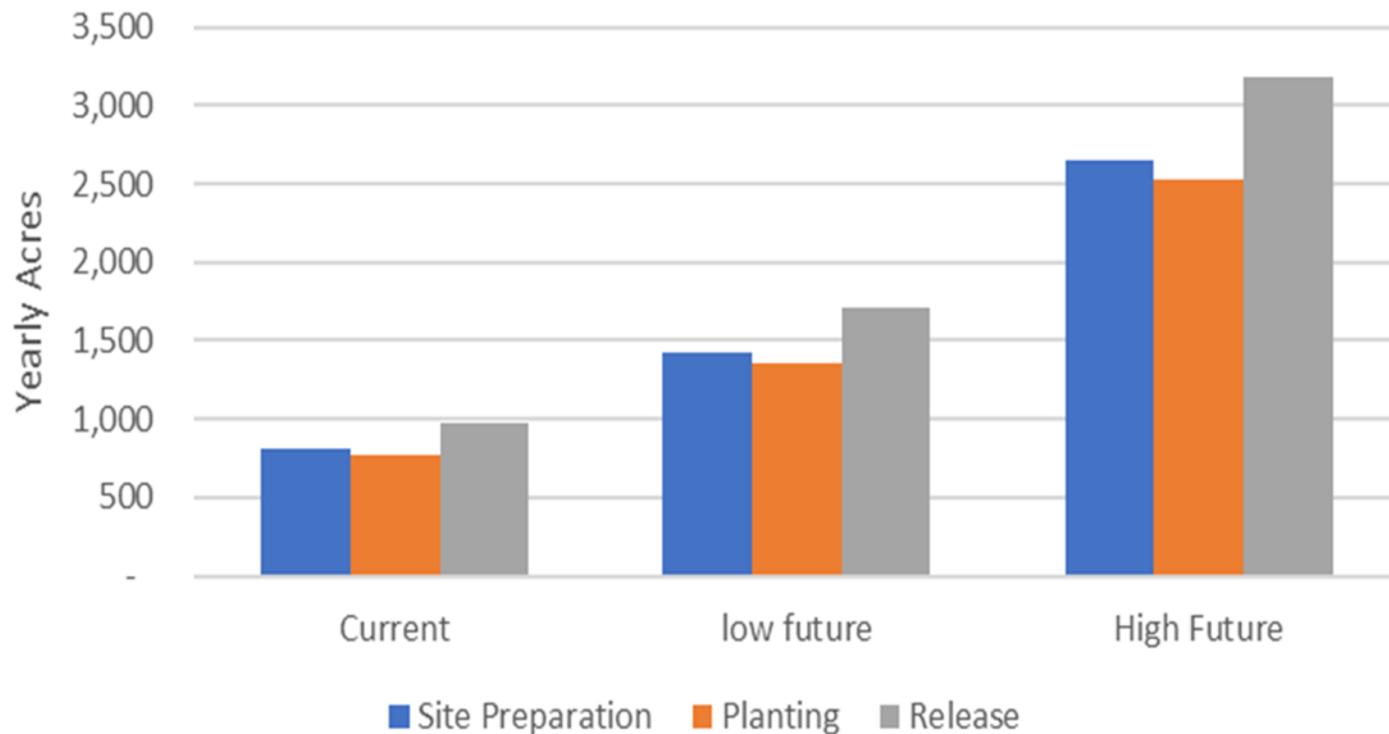
RTRT can/will cover salary

Reforestation Acres Under different funding Scenarios -Region 5



Planting acres result from balancing site preparation and release costs under each scenario

Reforestation Acres Under different funding Scenarios -Forest level

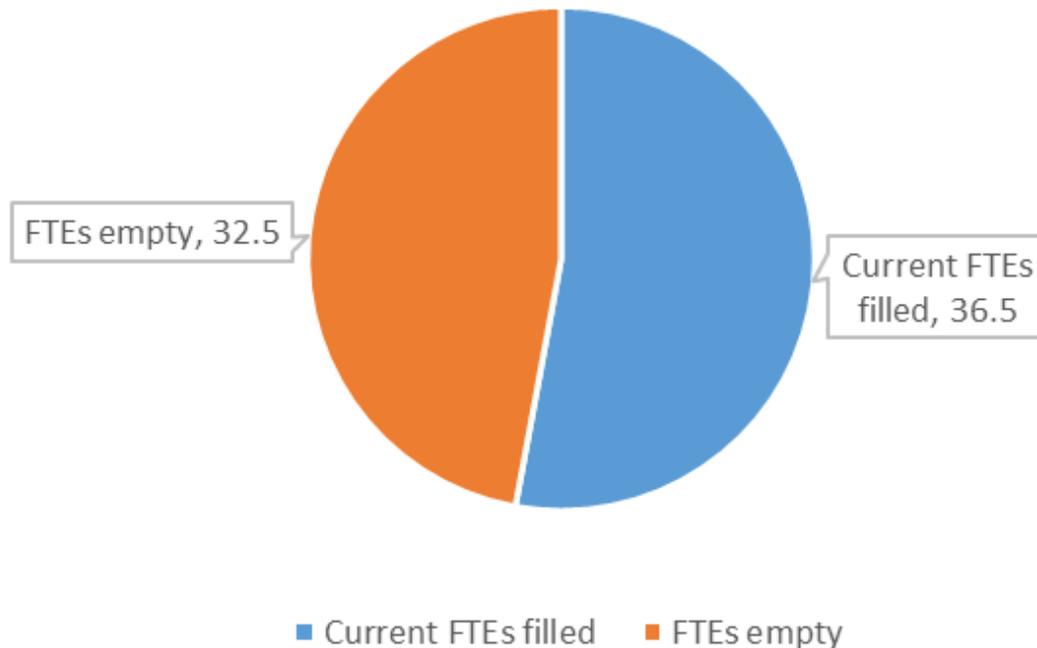


Typical Forest could see 1,300 to 2,500 acres of planting - Likely more in the first five years after ramp up.

Forest should be laying out 40 to 50 units for site preparation each year

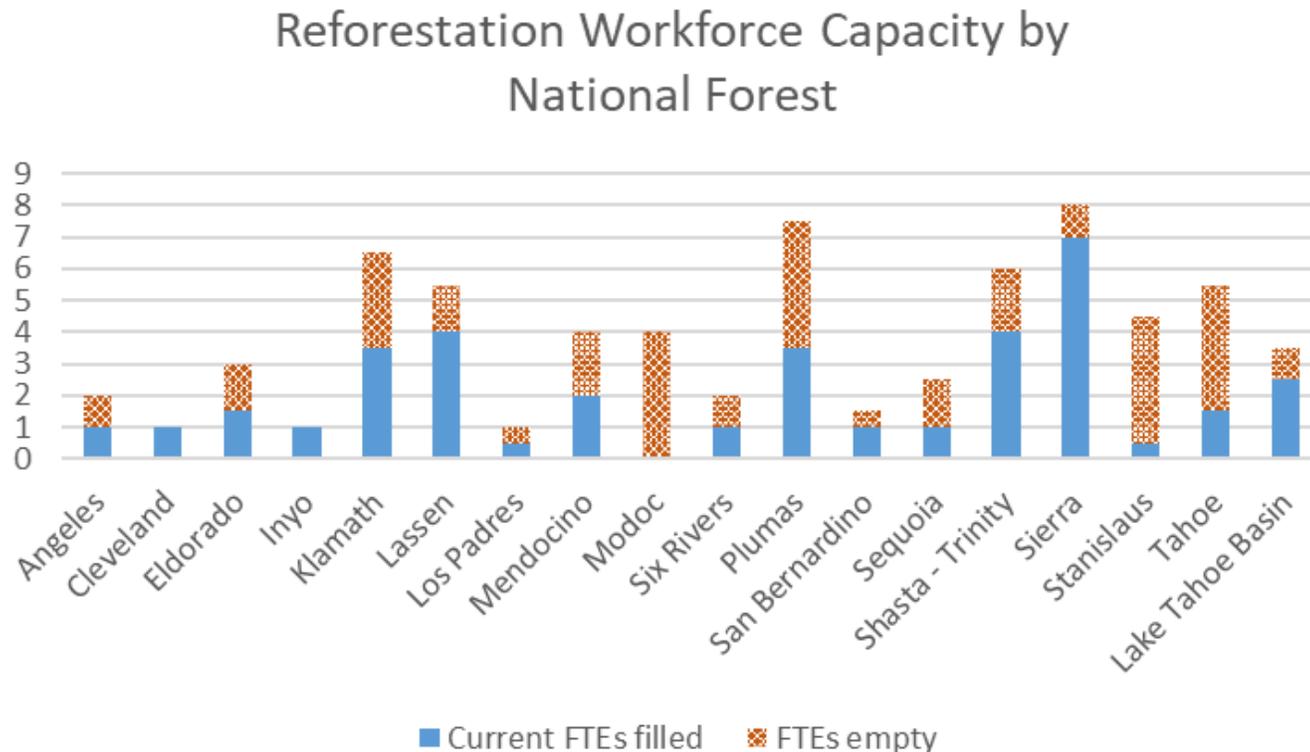
Current Reforestation Work Force Capacity (Approximate)

R5 Reforestation Workforce Capacity

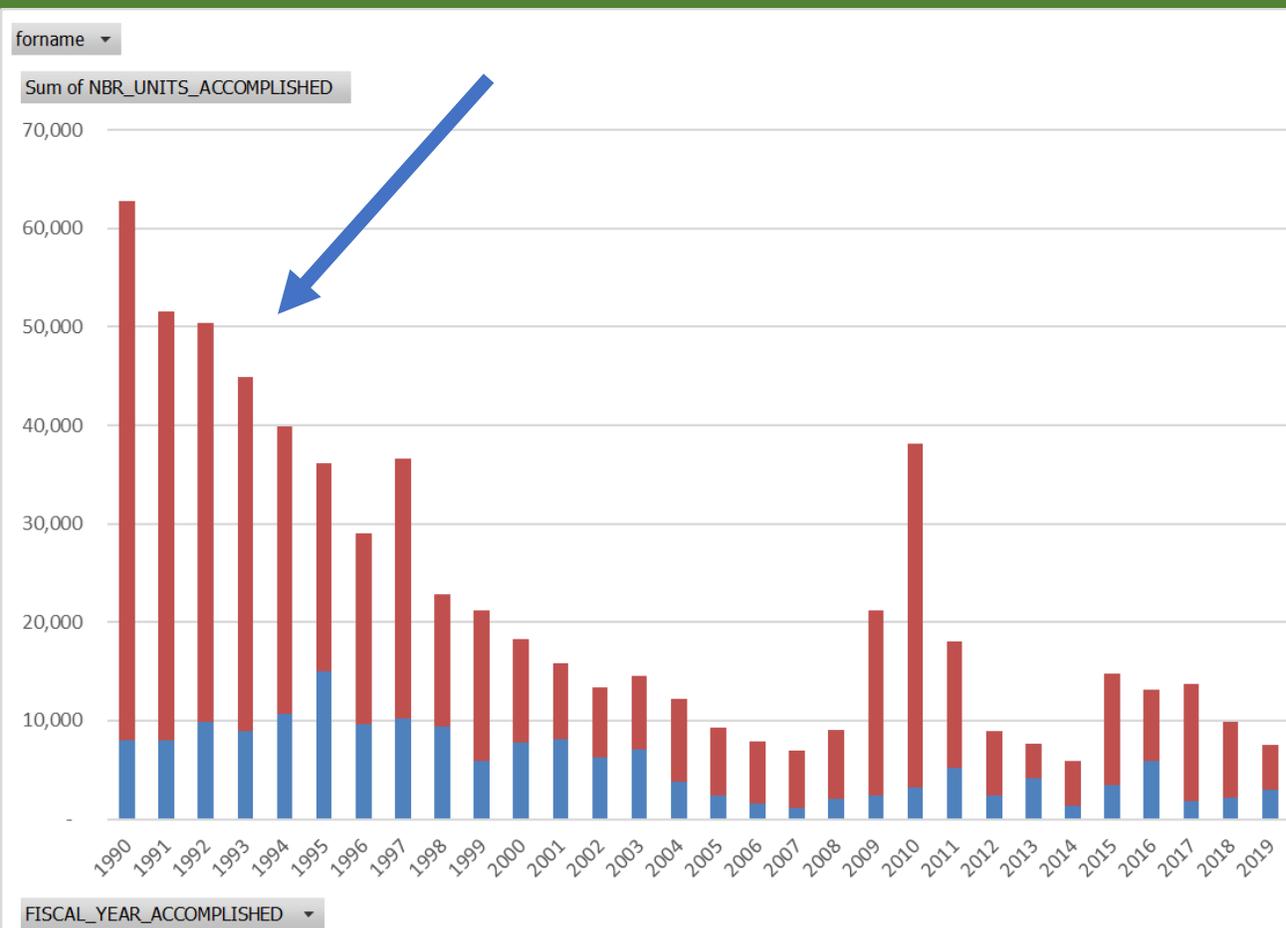


- FTEs based upon .5 FTE for each silviculturist position, 1 FTE for each culturist, assistant culturist, timber stand improvement crew leader, or forestry technician.

Current Reforestation Workforce Capacity (Approximate)



- FTEs based upon .5 FTE for each silviculturist position, 1 FTE for each culturist, assistant culturist, timber stand improvement crew leader, or forestry technician.



Historical perspective on planting acres and staffing

It will take 15 to 25 culturists and silviculturists per Forest to triple output

Table 3. Comparison of approximate total numbers of culturists and silviculturists ("permanent" staff positions) on selected National Forests, Pacific Southwest Region, 1990 and 1993.

National Forest	Sept. 1990	Fall, '93	Difference
Klamath	36	23	- 36 %
Modoc	12	12	0
Plumas	33	19	- 42
Six Rivers	22	10	- 55
Stanislaus	40	37	- 7

Source: Listing of R-5 personnel in Timber Management as of 9/11/1990 (copy on file at the Regional Office) and personal communications with Ed Matthews, Bill Merrhiew, Dick Castaldini, Bill Jones, and Mike Rutty for the respective alphabetically-listed National Forests.

Click, C., Fiske, J. N., Sherlock, J., & Wescom, R. (1989). Alternatives to herbicides: update based on the five-year herbicide use moratorium in the USDA Forest Service Pacific Southwest Region. In Proceedings annual Forest Vegetation Management Conference (USA).

Average Forest Target 1,300 to 2,500 acres

This organization produces 1,000 to 1,500 acres of planting annually

Partner relationships can add acres and/or reduce high-cost treatments

Forest would need to double this organization to achieve 2,500 to 4,000-acre target

Assumes Effective site preparation release

