

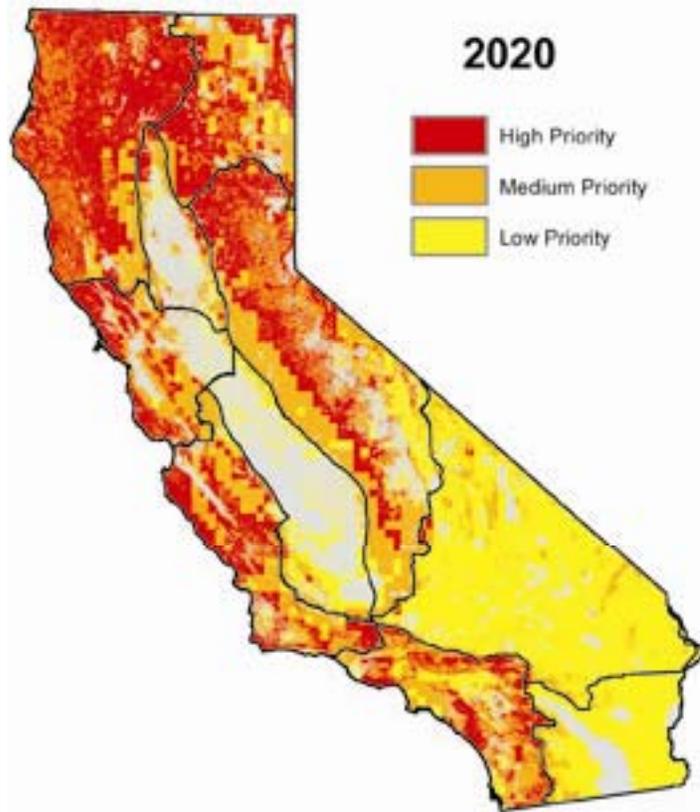
State Rules and Programs for
Achieving AB 32 Forest GHG Target
and Ecosystem Sustainability on
California's Privately Owned
Timberlands

Bill Snyder
CAL FIRE

Threats to Forests, Carbon, and AB32 Scoping Plan Forest Sector Targets

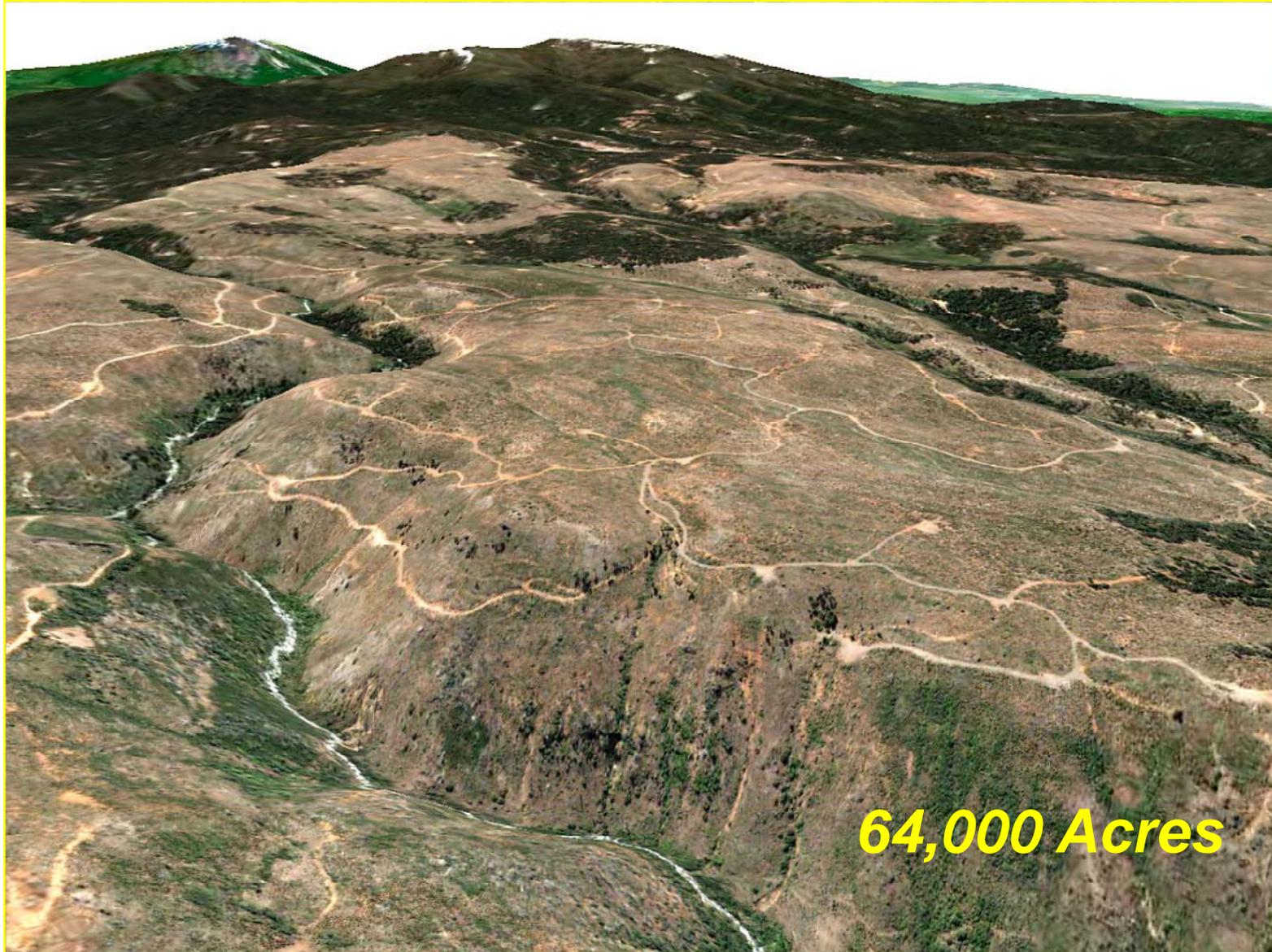
- Wildfire
- Insect
- Disease
- Unsustainable levels of harvest
- Conversion
- Climate change

Climate Change Threats and Opportunities: Threats to Forest Carbon from Wildfire, Insects and Disease



High priority landscape acres by ownership	
USFS	12,240,000
BLM	1,350,000
DOD	240,000
Tribal	310,000
NPS	800,000
Other Federal	70,000
Other Gov.	1,120,000
Private	13,390,000
NGO	100,000

FOUNTAIN FIRE 1992



64,000 Acres



Private forests and rangelands potentially impacted by projected development, 2000–2040, by land cover type (thousand acres)

Land cover type	2000 undeveloped land base	Area developed at density of at least one house per 20 acres				Total 2000-2040	Percentage change 2000 to 2040
		2000-2010	2010-2020	2020-2030	2030-2040		
Conifer Forest	5,564	63	104	58	101	326	6%
Conifer Woodland	407	5	2	19	7	33	8%
Hardwood Woodland	3,686	126	149	120	101	496	13%
Hardwood Forest	2,358	74	60	54	61	249	11%
Grassland	8,273	159	171	136	145	611	7%
Shrub	4,164	112	175	102	143	532	13%
Desert Shrub and Woodland	3,677	108	86	118	132	444	12%
Wetland	134	0	1	1	1	3	2%
Total	28,263	647	748	608	691	2,694	10%



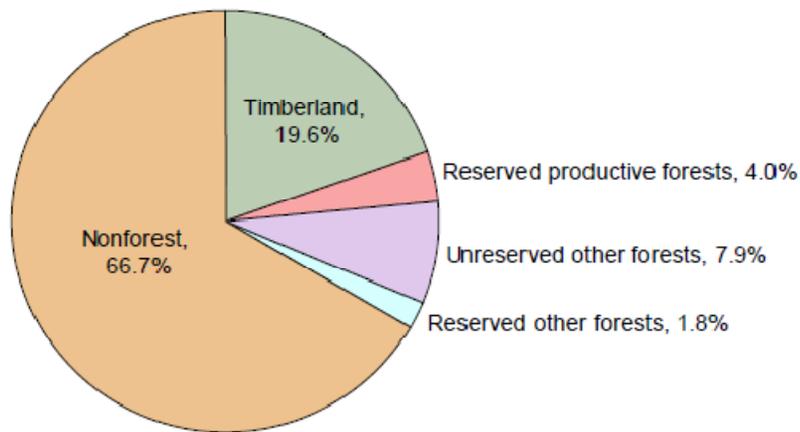
Source: FRAP, 2001 (version: FRAP Development Projections (Census 1990), v03_1; FRAP Multi-Source Land Cover, v02_1)



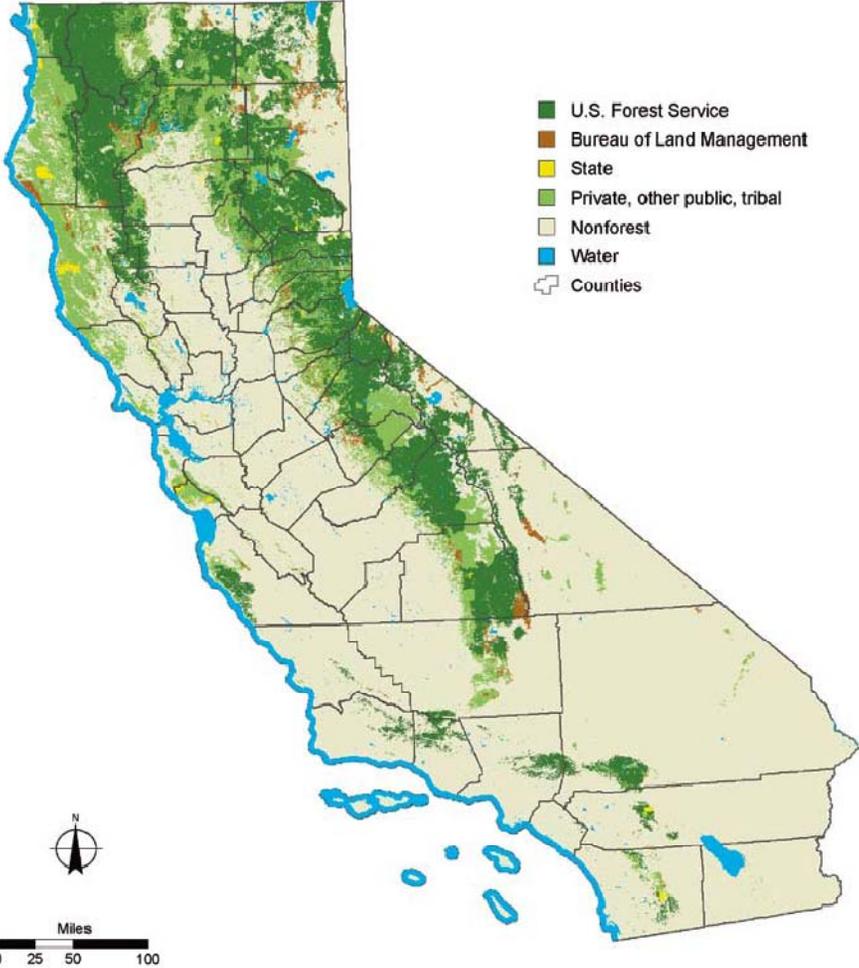
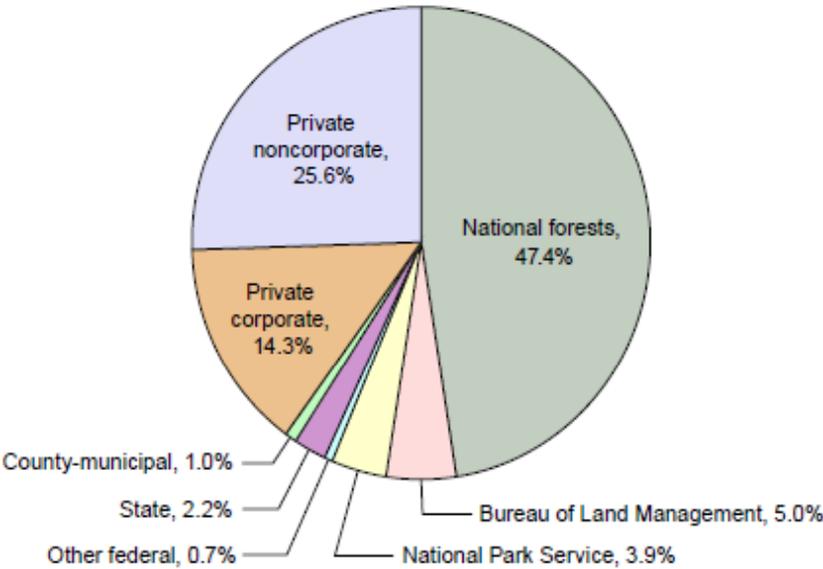
Assessing Effectiveness of Regulatory Approaches to Support AB32 Goals

- ***Analytical elements:***
 - Landbase subject to regulation,
 - Regulatory interface with landowner activities, and
 - Private landownership types landowner goals.
- ***Effectiveness Elements-How well do regulations provide:***
 - Indirect or direct support for sustaining or increasing carbon stocks,
 - Sustainability of other resources,
 - feasible cost effective harvest permitting?
- ***What are the informational and analysis gaps?***

What is the Timberland Base?



How Much of the Timberland Base is in Private Ownership



Growing Stock Trends in California

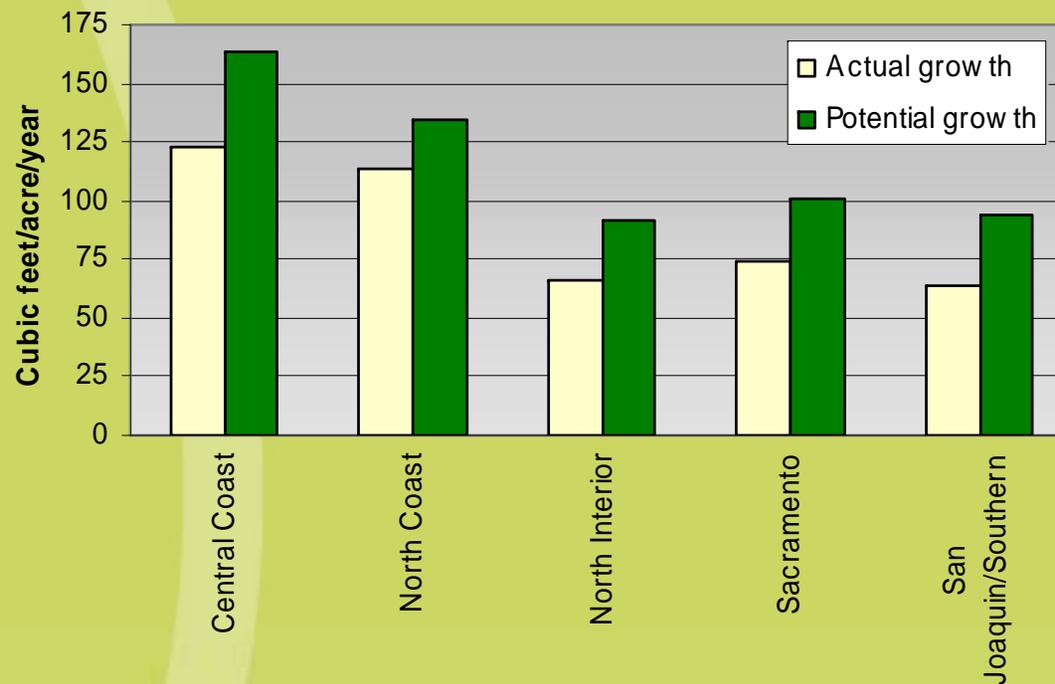
Good News!!

- Both growing stock and growth rates are increasing on the private timberland component of Forest Sector
- There are opportunities to improve growth and stocking through forest management
- Forest management will provide opportunities to improve resiliency of forest stands and landscapes

Regional Productive Capacity Indicators

Actual growth rates are significantly lower than potential growth rates in all regions, primarily due to allocation of growing space and nutrients to small trees, non-commercial tree species, and other vegetation. Actual tree growth rates vary by region and are highest in the high rainfall, low elevation forests along the coast.

Actual and potential growth of trees on timberlands, conifer and hardwood species, by resource area, 1994



Total Forest Inventory, Growth and Mortality

Table 1.2.9 Total live tree stocks and estimated annual change from tree growth and mortality									
Landbase	Acres	Stocks				Change, Net of Mortality			
		CO2e (metric tons)	Cubic Feet (thousands)	Board Feet (thousands)	Number of Trees	CO2e (metric tons)	Cubic Feet (thousands)	Board Feet (thousands)	Number of Trees
All Forestlands	32,114,317	5,099,162,048	113,695,755	447,709,621	10,058,521,955	40,046,799	1,419,806	5,764,470	-58,328,612
Public Forestland	19,467,566	3,343,515,541	76,368,749	340,794,682	5,685,834,310	30,611,051	751,107	3,438,690	-38,089,971
Private Forestland	12,646,761	1,755,647,124	37,327,502	106,914,068	4,372,687,646	9,438,766	668,726	2,325,853	-20,237,568
Private Timberland	7,647,009	1,418,463,058	31,054,447	103,118,272	4,364,675,374	9,516,486	591,411	2,242,743	-17,094,787

Per Acre Live Trees and Annual Change

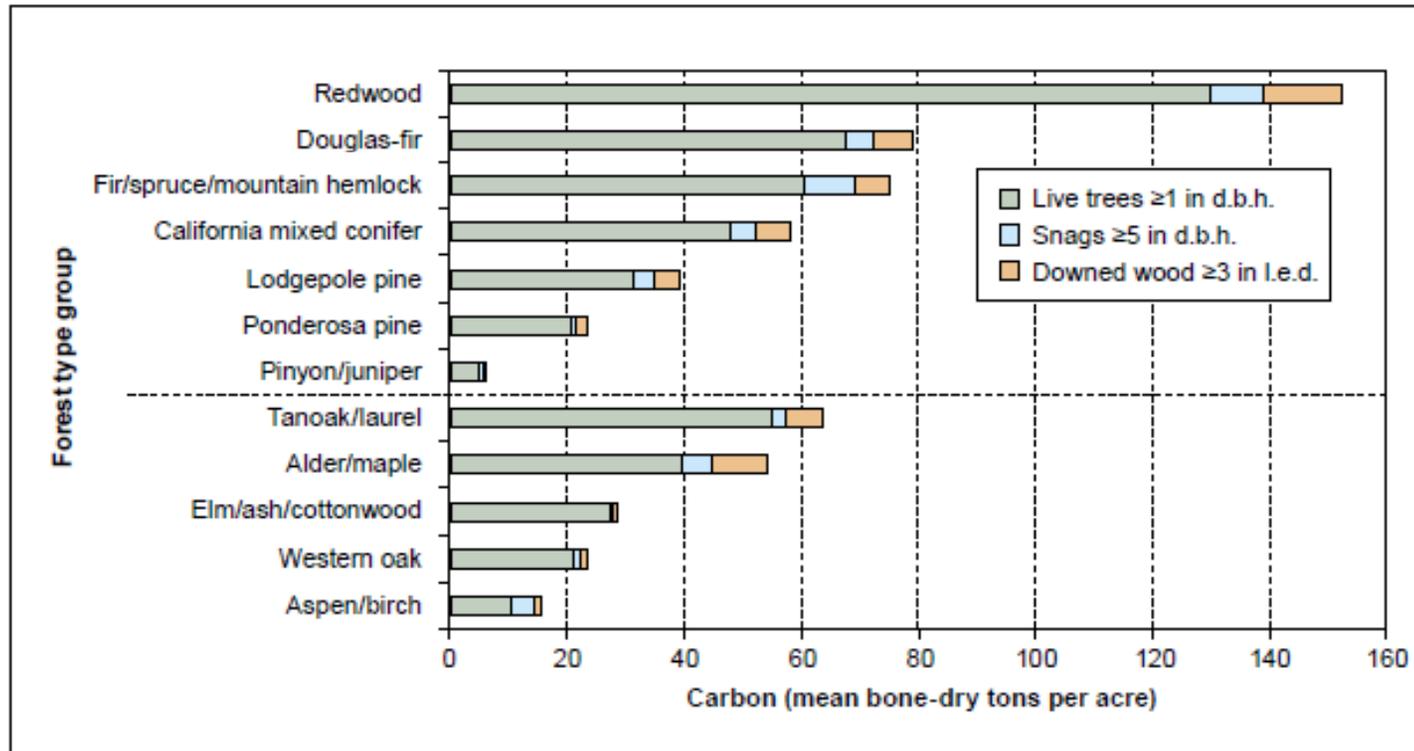
Table 1.2.10. Per acre live tree stocks and estimated annual change from tree growth and mortality										
Landbase	Stocks					Change, Net of Mortality				
	CO2e (metric tons)	Cubic Feet (thousands)	Board Feet (thousands)	Number of Trees	Stand Density Index	CO2e (metric tons)	Cubic Feet (thousands)	Board Feet (thousands)	Number of Trees	Stand Density Index
All Forestlands	158.8	3.5	13.9	313.2	214.1	1.247	0.044	0.179	-1.816	2.422
Public Forestland	171.7	3.9	17.5	292.1	225.1	1.572	0.039	0.177	-1.957	2.015
Private Forestland	138.8	3	8.5	345.8	197.1	0.746	0.053	0.184	-1.6	3.05
Private Timberland	185.5	4.1	13.5	570.8	258	1.244	0.077	0.293	-2.235	4.189

Carbon Sequestration Analysis for Private Timberlands

Table 5. Results for California private timberlands (7,647,009 acres). Harvest emissions were reduced by 22.8% for to avoid double-counting with mortality and fire emissions.

Source	Type	C (tonnes)	CO2e (tonnes)
Growth	Storage	-3,603,556	-13,225,049
Model Mortality	Emission	1,010,508	3,708,564
Wildfire	Emission	184,106	675,670
Harvest (merch)	Emission	524,612	1,925,327
Harvest (non-merch)	Emission	734,768	2,696,600
WP (in-use)	Pool	-361,397	-1,326,326
WP (landfill)	Pool	-45,283	-166,188
Net		-1,556,240	-5,711,402

Forest Carbon In Live Tree, Snags and Downed Wood by Forest Type



Approaches to Addressing Forest Sector Threats on California's Privately Owned Timberlands

- Voluntary-landowner initiated
- Market based
- Incentive based
- **Regulation**
- Technology
- Effective global GHG reduction efforts

CAL FIRE's Regulatory Interface-

What CAL FIRE Regulates

- Timber Harvesting for commercial purposes on **private** timberlands
- Fire prevention standards (4290 & 4291)
- Building standards and codes
- Timberland conversions
 - TPZ
 - Non-TPZ

Key Acronymns

- ***MSP***-Maximum Sustained Productivity (14 CCR 913.10, 913.11)
- ***LTSY***-Long-Term Sustained Yield (14 CCR 895.1)
- ***SYP***-Sustained Yield Plan [14 CCR 913.11(b), 14 CCR Article 6.75]
- ***NTMP***-Non-industrial Management Plan (14 CCR Article 6.5)
- ***FPRs***-Forest Practice Regulations
- ***CCR***-California Code of Regulations

Regulation of Commercial Timber Harvesting on Private Timberlands

- Applicable to harvesting for commercial use on timberlands.
- Generally involves input of a Registered Professional Forester.
- Conducted by Licensed Timber Operators.
- Subject to rules and regulations of the Board of Forestry and Fire Protection.
- Subject to oversight and enforcement by CAL FIRE.

Harvest Document Types and Processes

Permits for **Discretionary** activities— requires project level review...

- Timber harvest plans
- Timberland conversion
- Non-industrial Timber Harvesting Plans
- Sustained Yield Plans
- Programmatic Timber Environmental Impact Report

Exemptions and emergencies for **ministerial activities** –

- Salvage of dead and dying trees –Exemption/ Emergency Notice
- Woody debris/slash for energy exemption
- Fire safe clearance exemption (150 ft fire clearance)
- LaMalfa exemption for commercial thinning
- Fuel hazard reduction Emergency Notice

Regulatory tools for Achieving AB32 GHG Targets –Sustainability of Forest Growing Stocks on Private Timberland

There are no rules which address GHG directly except through application of CEQA Guidelines

There are, however, several rules which address forest productivity and sustainability:

- **Timber Harvest permits must demonstrate Maximum Sustained Production of High Quality Timber Products**
- **Ownership-wide 100 year projection of growth and yield is required for:**
 - **NTMP –2,500 ac or less**
 - **Option A, SYPs – 50,000 acres or more**

Volume (mmbf) and Value of California Timber Harvest

Table 1.2.13. Volume (million board feet) and value from timber production in California

Species	2000	2001	2002	2003	2004	2005	2006	2007	2008
Douglas-fir and Larch	1,080	922	825	761	889	871	770	630	545
Hem-Fir	774	650	685	753	781	713	709	682	532
Other Mixed Softwood	741	672	570	609	545	628	557	565	553
Redwood	578	488	554	532	548	476	554	433	290
WWPA Volume	3,173	2,732	2,634	2,655	2,763	2,688	2,590	2,310	1,920
BOE Volume	1,966	1,603	1,690	1,663	1,706	1,725	1,631	1,626	1,372
WWPA Value (wholesale)	\$1,362	\$1,128	\$1,114	\$1,015	\$1,287	\$1,248	\$1,186	\$1,040	\$508
BOE Value (stumpage)	\$909	\$575	\$452	\$448	\$501	\$547	\$534	\$475	\$323

Data Sources: 2008 Statistical Yearbook of the Western Lumber Industry (WWPA) and California State Board of Equalization, 2009.

Volume and Value Trends for California Timber Products

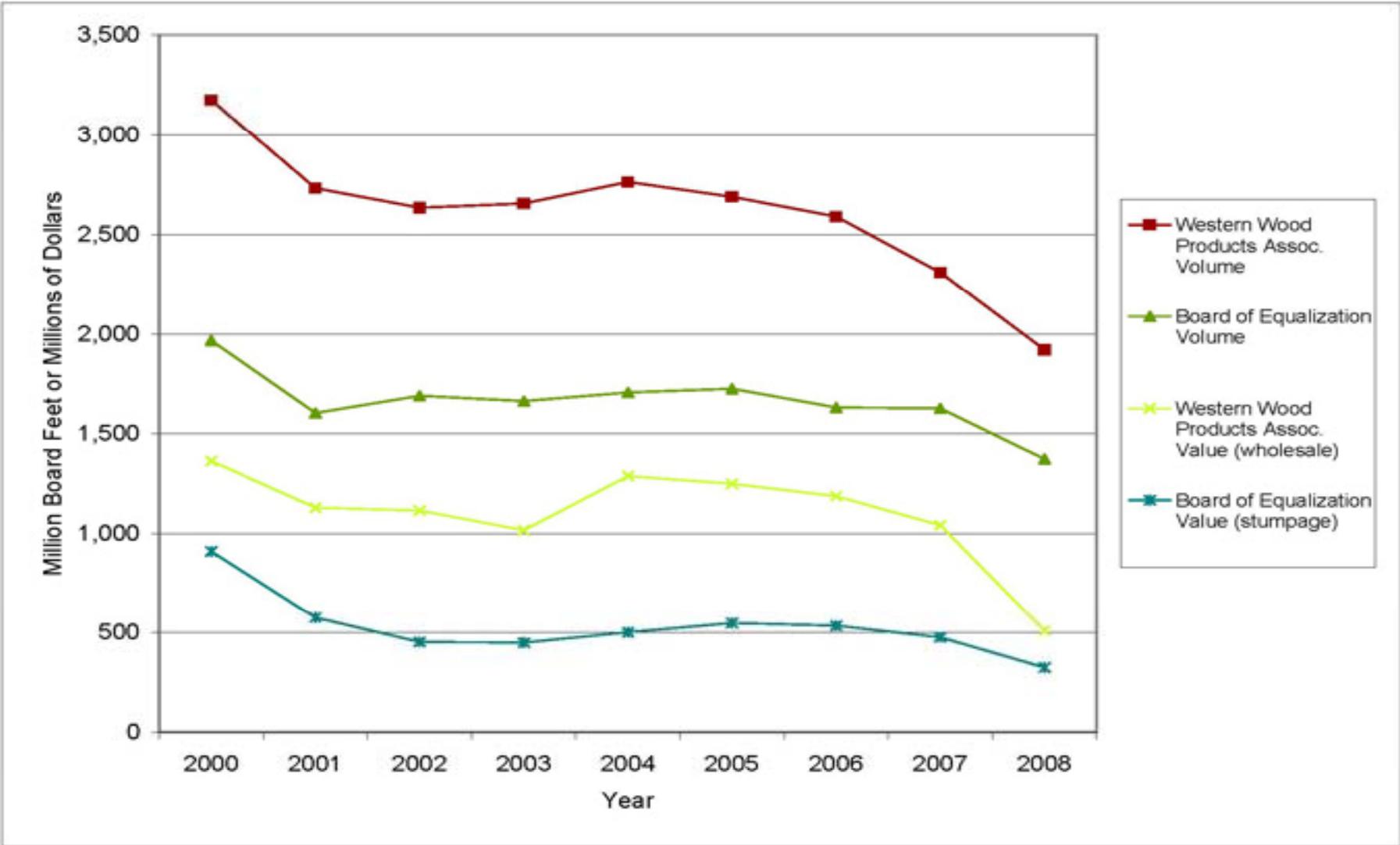


Table 1.2.14. Acres of standard silvicultural prescriptions on private timberlands in THPs by year

Year	Clearcut	Commercial Thin	Conversion	Fuel-break/Defensible Space	Group Selection	Rehabilitation	Right-of-way (Road Construction)	Sanitation-Salvage	Seed Tree Removal	Seed Tree Seed Step	Selection	Shelterwood Prep Step	Shelterwood Removal	Shelterwood Seed Step	Special Treatment Area Prescription	Substantially Damaged Timberland	Transition	Variable Retention	Total
1990	14,279	18,079	0	0	0	11,458	0	14,710	8,764	1,117	41,173	1,810	77,224	1,449	155	0	66,722	0	256,940
1991	7,751	28,761	163	0	0	4,614	0	6,824	5,976	1,317	50,099	1,970	42,415	2,819	120	0	53,358	0	206,187
1992	10,578	40,728	0	0	0	7,520	0	14,171	5,357	791	86,941	2,874	25,353	1,075	111	0	51,161	0	246,660
1993	11,303	28,225	54	0	0	7,510	0	48,171	7,877	1,873	70,612	1,769	28,690	3,093	284	0	27,589	0	237,050
1994	11,892	20,729	1,347	0	47	6,977	59	10,838	6,638	1,849	71,326	1,924	27,218	1,059	355	0	11,078	0	173,336
1995	13,025	25,923	833	270	1,530	16,681	84	11,218	16,076	2,207	63,881	1,098	24,411	79	476	0	5,038	0	182,830
1996	20,468	61,336	1,169	0	4,205	18,082	18	18,158	20,840	1,666	106,103	1,241	40,979	479	970	114	4,049	0	299,877
1997	23,236	28,734	1,044	716	5,908	12,739	101	11,849	15,087	1,133	68,338	302	27,772	262	144	0	5,243	0	202,608
1998	25,287	33,009	1,201	474	8,002	5,261	303	12,854	10,709	906	55,951	1,440	32,466	267	162	198	2,454	0	190,944
1999	37,316	27,322	689	2,838	15,789	7,553	559	14,932	12,597	783	52,059	1,718	42,409	382	277	444	3,471	0	221,138
2000	23,628	9,878	2,075	257	5,303	6,299	403	10,603	9,934	707	42,790	1,257	19,737	65	737	3	2,927	38	136,603
2001	22,307	25,253	376	1,057	7,241	8,013	466	3,816	7,826	260	33,135	755	13,082	73	352	2,705	5,209	0	131,926
2002	26,090	20,488	2,286	1,625	15,613	3,787	542	4,122	4,326	810	45,781	230	15,982	10	157	19	2,759	0	144,627
2003	23,561	20,093	365	1,192	16,510	1,513	592	4,990	7,971	357	41,064	355	12,785	68	163	127	2,003	0	133,709
2004	26,301	24,946	1,082	2,543	16,595	1,739	481	9,421	4,668	541	53,404	99	16,915	7	307	0	2,225	2,003	161,274
2005	24,319	6,825	646	841	15,086	1,837	508	5,138	5,808	636	19,772	348	11,574	6	558	0	1,527	743	95,429
2006	21,320	9,299	1,460	1,094	13,773	1,689	353	6,689	1,567	226	34,987	166	7,765	8	236	0	1,908	1,231	102,540
2007	22,840	8,450	1,101	152	12,807	2,140	368	5,613	5,169	159	32,004	236	6,950	68	524	0	3,310	1,132	101,891
2008	21,919	4,934	556	3,273	22,390	1,717	469	6,963	2,664	67	41,225	220	6,987	30	260	0	5,500	1,128	119,174
Total	387,420	443,012	16,447	16,332	160,799	127,129	5,306	221,080	159,854	17,405	1,010,645	19,812	480,714	11,299	6,348	3,610	257,531	6,275	3,344,743

Table 1.2.11. Acres and percent of silvicultural type by county for private timberland harvest averaged over 10 years (2000–2009).

County	Acres of Timberland					Percent of Timberland			
	Even-Aged	Intermediate	Uneven-Aged	Total	Private	Even-Aged	Intermediate	Uneven-Aged	Total
Alpine		10	18	28	11,678	0	0.09	0.15	0.24
Amador	669	243	176	1,088	120,344	0.56	0.2	0.15	0.9
Butte	2,404	677	441	3,523	265,310	0.91	0.26	0.17	1.33
Calaveras	1,373	350	818	2,541	210,304	0.65	0.17	0.39	1.21
Del Norte	880	216	234	1,329	106,023	0.83	0.2	0.22	1.25
El Dorado	3,618	863	732	5,213	369,048	0.98	0.23	0.2	1.41
Fresno		110	1,683	1,792	95,663	0	0.11	1.76	1.87
Glenn	320		16	336	5,381	5.95	0	0.3	6.24
Humboldt	8,965	2,611	4,226	15,802	1,234,885	0.73	0.21	0.34	1.28
Kern		267	767	1,034	149,044	0	0.18	0.51	0.69
Lake	278	104	282	664	100,104	0.28	0.1	0.28	0.66
Lassen	4,262	1,681	5,001	10,944	369,109	1.15	0.46	1.35	2.97
Madera		10	164	174	88,006	0	0.01	0.19	0.2
Marin	200	93	372	664	35,850	0.56	0.26	1.04	1.85
Mendocino	6,031	2,611	7,463	16,105	1,408,582	0.43	0.19	0.53	1.14
Modoc	2,320	5,732	2,755	10,807	224,758	1.03	2.55	1.23	4.81
Napa	2	64	29	95	108,598	0	0.06	0.03	0.09
Nevada	1,268	766	1,553	3,586	288,256	0.44	0.27	0.54	1.24
Placer	1,619	1,193	1,457	4,269	239,259	0.68	0.5	0.61	1.78
Plumas	1,301	1,600	2,463	5,364	309,628	0.42	0.52	0.8	1.73
San Bernardino		16		16	48,325	0	0.03	0	0.03
San Mateo		5	496	501	40,342	0	0.01	1.23	1.24
Santa Clara			261	261	43,223	0	0	0.6	0.6
Santa Cruz		15	1,047	1,062	114,380	0	0.01	0.92	0.93
Shasta	9,295	4,026	8,982	22,304	832,702	1.12	0.48	1.08	2.68
Sierra	834	1,077	1,746	3,657	110,625	0.75	0.97	1.58	3.31
Siskiyou	8,867	5,483	5,431	19,780	836,828	1.06	0.66	0.65	2.36
Sonoma	399	213	828	1,440	433,352	0.09	0.05	0.19	0.33
Tehama	3,400	575	1,407	5,382	259,027	1.31	0.22	0.54	2.08
Trinity	5,414	760	871	7,045	428,952	1.26	0.18	0.2	1.64
Tulare		227	182	409	94,992	0	0.24	0.19	0.43
Tuolumne	934	407	1,010	2,351	159,905	0.58	0.25	0.63	1.47
Yuba	955	576	575	2,107	85,066	1.12	0.68	0.68	2.48
Total	65,608	32,580	53,487	151,675	9,227,549	0.71	0.35	0.58	1.64

Carbon Sustainability and Regulations- Long Term Sustained Yield Requirements for Timberland Ownerships Greater than 50,000 acres

- Maximum Sustained Productivity (MSP) to be demonstrated through an Option “a” [14 CCR 913.11(a)] or and Option “b” [14 CCR 916 913.11(b)]
- MSP is demonstrated through development of a LTSY plan which reflects:
 - Yield of timber products specified by landowner
 - Inventory and growth on inventory at the end of a 100 year planning period.
 - Reflects constraints that limit the yield and harvest. Examples of constraints include:
 - Regulatory requirements (WLPZs, unstable areas, wildlife)
 - HCPs, NCCPs or other applicable plans.
 - Legally binding encumbrances such as conservation easements
 - Voluntary measures

Landowner	Total Ownership or Timbered Acres	MSP Rule Standard
Barnum	45,219	Option A
Coastal Ridges	32,626	Option A
Collins Pine	90,652	SYP
Crane Mills-Main Block TAA	46,369	Option A
Crane Mills-North Block TAA	23,033	Option A
Crane Mills-Commander TAA	20,747	Pending submission
Fruitgrowers: Hilt-Siskiyou Forest	154,000	Option A
Fruitgrowers-Burney/Lassen Forest	126,768	Option A
Green Diamond	451,090	Option A
Hawthorne	113,886	Option A
Hearst	60,645	PTEIR
Humboldt Redwood Co.	195,000	Option A
Mendocino Redwood Company	228,780	Option A
Red River Forest (WM Beaty)	119,310	SYP
Roseburg	171,418	Option A
Shasta Forest (WM Beaty)	139,018	SYP
Sierra Pacific Industries	1,800,000	Option A (one analysis for each Forest Practice District)
Soper-Wheeler; Interior	67,209	Option A
Soper-Wheeler; Coast	34,316	Option A
Timber Products-Scott Mtn.	34,203	Option A
Timber Products-Klamath	44,337	Option A
Usal Redwood Forest Company	50,600	Pending submission-June 2010
Jackson Demonstration State Forest (DSF)	48,652	Option A
Boggs Mountain DSF	3,493	Option A
Soquel DSF	2,722	Option A
Mountain Home DSF	4,858	Option A
Latour DSF	9,033	Option A
Total Acres	4,117,984	

Non-Industrial Timber Management Plans- Requirements for Growth and Yield

- NTMPs are available to timberland ownerships of less than 2500 acres.
- NTMPs can develop Long Term Sustained Yield Plans Using Option “b” or demonstrate sustainability through balancing of growth and harvest per the FPRs.
- NTMP growth and yield content is specified by rule [14 CCR 1090(g),(h),(i) and (j)]

Managed Timberland on Private Ownerships & Demonstration of Sustainability

- Total private timberland landbase- **7,647,000** acres
- Timberland covered by Long Term Sustained Yield Plans (LTSY)- **4,117,984** acres.
- Timberland covered by NTMP Growth and Yield demonstrations- Approximately **325,000** acres.
- The combination of LTSY documents and NTMPs results in an estimated **58%** of the private timberlands covered by long term sustained yield demonstration analyses.

Timberland Ownership Patterns

(Birch 1997)

- Approximately 613 million acres in ownerships of 10 acres or less.
- Approximately 92 thousand landowners control 2.8 million acres of timberland in parcels ranging from 10 to 100 acres in size.
- An estimated 850 to 1000 landowners own between 2,500 and 10,000 acres (FRAP)

Regulatory Requirements for Project Specific GHG Emissions Estimates-THP application of CEQA Guideline Language

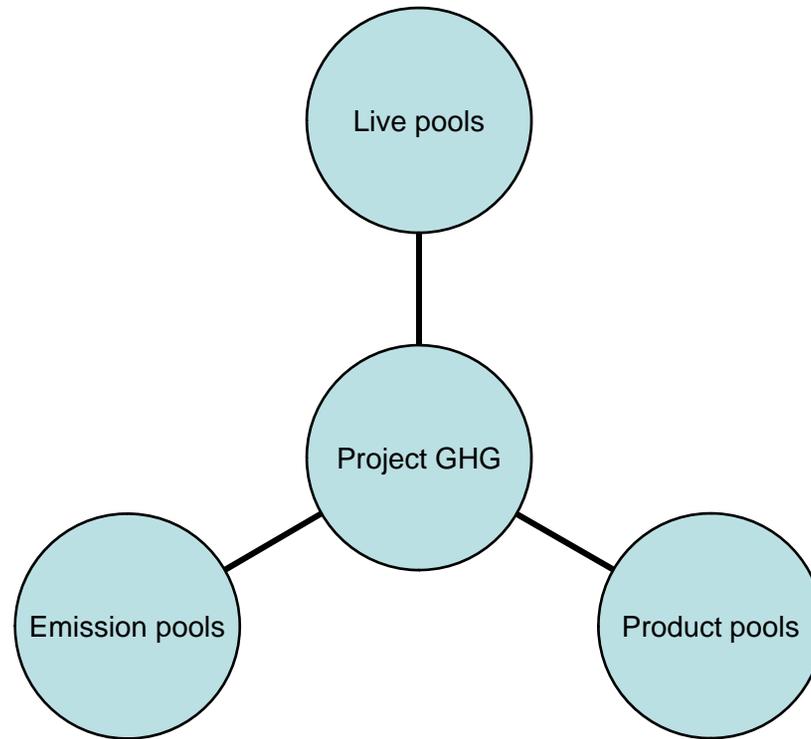
Section 15064.4 Determining the Significance of Impacts from Greenhouse Gas Emissions

- (a) The determination of the significance of greenhouse gas emissions calls for a careful judgment by the lead agency consistent with the provisions in section 15064. A lead agency should make a **good-faith effort, based on available information, to describe, calculate or estimate the amount of greenhouse gas emissions resulting from a project.** A lead agency shall have discretion to determine, in the context of a particular project, whether to:

CEQA Guideline Language Section 15064.4 (continued)

- (1) Use a model or methodology to quantify greenhouse gas emissions resulting from a project, and which model or methodology to use. **The lead agency has discretion to select the model it considers most appropriate provided it supports its decision with substantial evidence.** The lead agency should explain the limitations of the particular model or methodology for use; or
- (2) Rely on a qualitative analysis or performance based standards.

Carbon Calculators-Core Elements



THP Specific GHG Calculation Examples

- Sierra-Pacific
- Green Diamond
- Bohemian Grove NTMP
- Smith and Heath
- CAL FIRE
- Other (?)

Regulatory Options to Address Threats to AB32 Targets from Wildfire, Insect and Disease

- *Options or reduction of threat prior to occurrence:*
 - THPs and Silvicultural applications to address overstocking
 - 150' Fire Safe Exemption [14 CCR 1038(d)]
 - LaMalfa Exemption [14 CCR 1038(i)]
 - Emergency Notice for Fuel Hazard Reduction (14 CCR 1052.4)

Regulatory Options to Address Threats to AB32 Targets from Wildfire, Insect and Disease

- ***Options available Post wildfire, disease or insect event to avoid emissions from standing dead trees:***
 - Emergency Notice (14 CCR 1052)
 - Emergency Notice for Insect Damaged Timberlands (14 CCR 1052.3)
 - Exemptions for salvage of dead, dying and diseased trees [14 CCR 1038(b),(d), and (f)]

Timberland Conversion Regulatory Program

- Applies to conversion of timberland only.
- CAL FIRE Permits or tracks:
 - timberland conversion permits
 - immediate rezoning TPZ permits
 - Subdivision exemption
 - 3 acre exemption
- Timberland or forest conversions not tracked by CAL FIRE
 - 10 year TPZ roll-out (likely future development)
 - Utility rights of way
 - Forest and woodland conversion

Timberland Conversion Data

	TCP Applications		Subdivision Exemptions		< 3 Acre Exemptions	
	Nos. Approved	Acres	Nos. Submitted	Acres	Nos. Submitted	Acres
1999	8	468	7	538	427	1,027
2000	12	488	14	1,852	446	1,062
2001	11	143	10	972	368	824
2002	24	653	6	688	553	1,040
2003	16	1,248	8	470	679	1,210
2004	11	163	13	2,840	731	1,383
2005	17	354	13	543	732	1,332
2006	20	987	16	1,048	678	1,273
2007	3	62	7	175	508	951
2008	5	263	4	468	298	598
Total	127	4,829	98	9,594	5,420	10,700
Average	13	482	10	959	542	1,070

CAL FIRE Regulatory Enforcement and Monitoring

At project or owner level

- Inspections

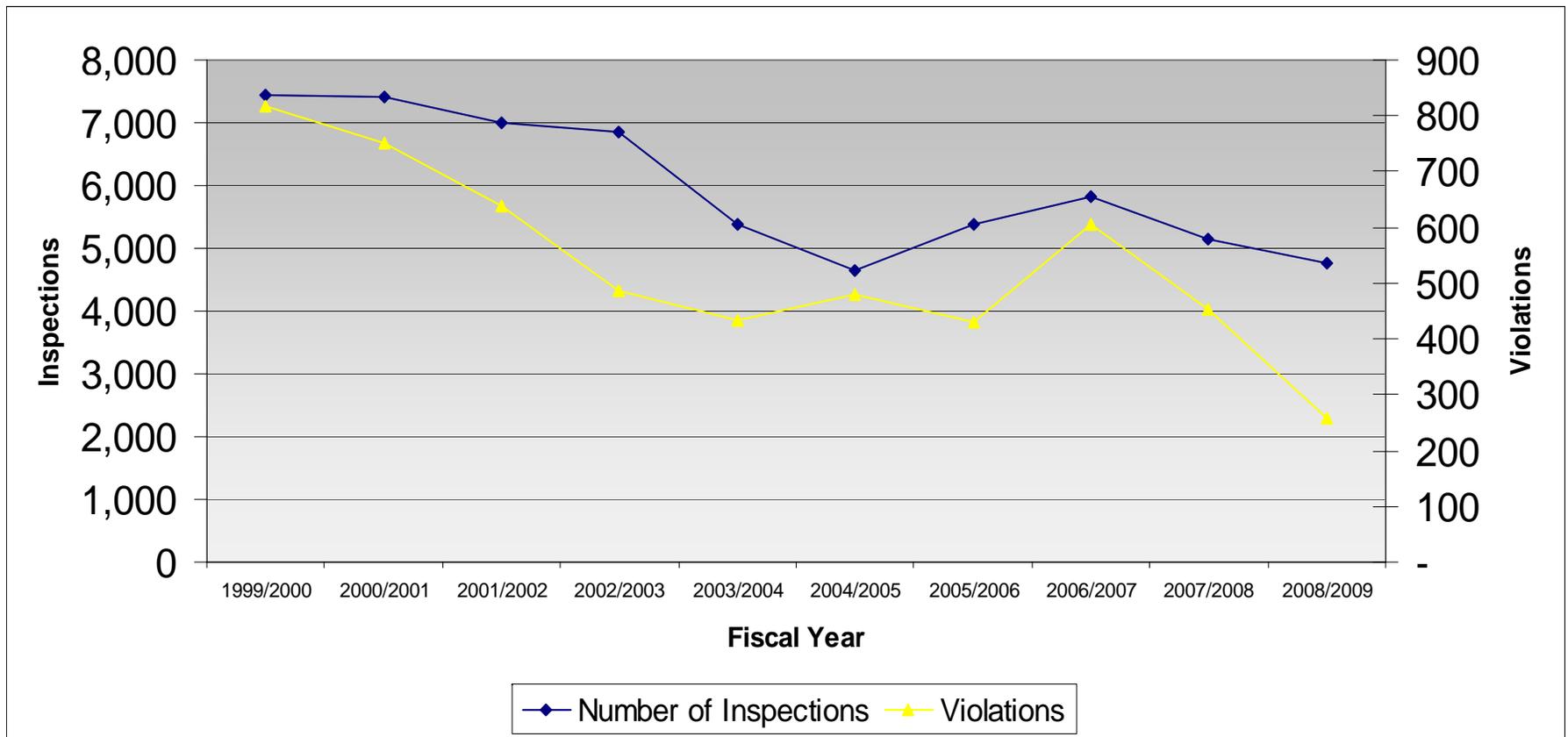
At or by State at the State level...

- Programs
- FRAP assessment
- MSG – effectiveness monitoring of rules

Sanctions

Monitoring and Enforcement Overview

- CAL FIRE has conducted approximately 6,000 inspections and has issued nearly 540 violations annually, on average.



Potential Gaps or Improvements

- Need for GHG calculations at the ownership level.
- Need to reconsider mitigations for conversions of non-TPZ timberlands.
- Improvement of current approaches to fuel hazard reduction projects to improve utility and feasibility.
- Need to address conversion of Forestlands
- Need for Life Cycle Analyses of FPR Stocking and silvicultural rules.
- Improved non timber information on biological carbon pools.
- Development of cost effective harvesting document options for small landowners (10-160 acres).
- Others ????????

IFWG Task 2 Deliverables

- Task 2 Deliverables:
 - An evaluation, as feasible, of the capacity of existing forest regulatory framework and programs to ensure achievement of Scoping Plan target
 - List of concerns and identified regulatory and programmatic gaps,
 - Recommendations, if needed, for amending regulations or improving program practices or procedures to ensure that CA forests achieve the Scoping Plan target
 - Recommendations, as needed, for longer term analysis, research, demonstration or monitoring of regulatory and other programs' effects on carbon sustainability.

Questions

