

# Fuel Treatment Evaluator

## Identifying and Prioritizing Hazardous Fuel Reduction Opportunities

### The Issue

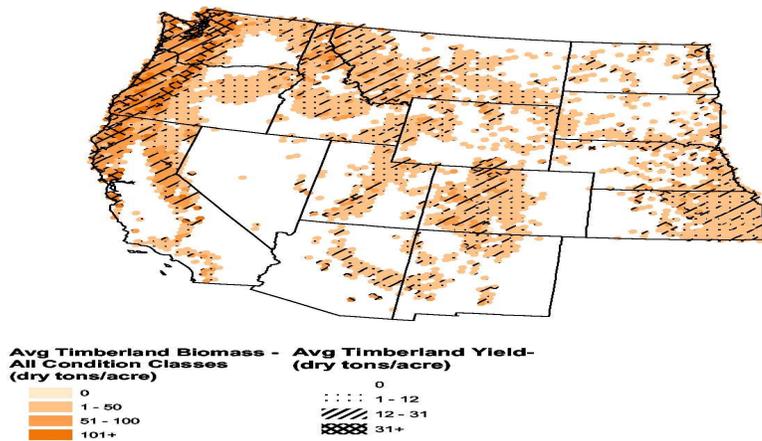
Natural fire cycles have been altered across large areas of the West, changing the vegetative character of fire-adapted ecosystems, and increasing wildland fire risk and hazard. The Healthy Forest Restoration Act (HFRA) supports the use of hazardous fuels reductions to return ecosystem functions and fire-cycles to normal. The magnitude of the fuels reduction effort and the associated cost are currently the subjects of much debate. The Fuel Treatment Evaluator (FTE), a strategic assessment tool capable of aiding the identification, evaluation, and prioritization of fuel treatment opportunities, could help inform the debate and facilitate effective implementation of HFRA.

### The Tool

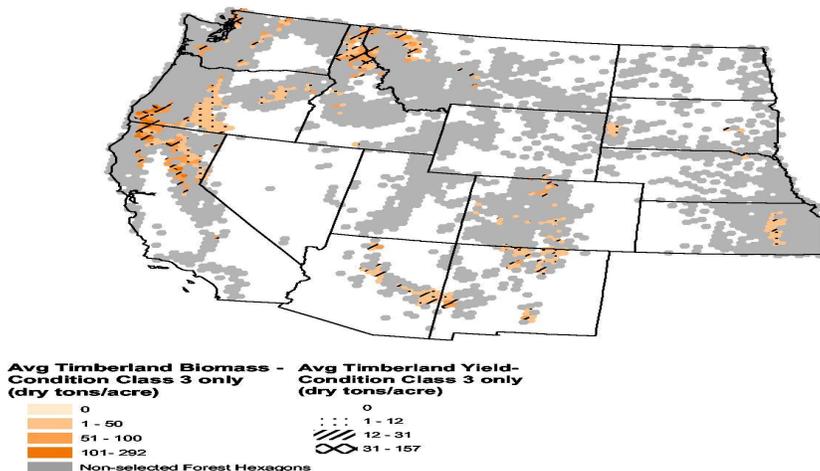
The FTE is a national web application developed by an interdisciplinary team of Forest Service R&D scientists. It is an institutionalization of the methodology used in the previous [Westwide Biomass Assessment](#). The tool uses Forest Inventory and Analysis (FIA) data, the Fire Regime Current Conditions map developed by Rocky Mountain Research Station (RMRS), the Wildland Urban Interface (WUI) map developed by North Central Research Station, and various fire effect, silvicultural prescription, forest product, and economic algorithms and models developed by the RMRS, Forest Products Lab, and Pacific Northwest Station. As such, the tool can be used to identify forests that have departed from historic natural fire regimes, are in need of thinning, and are in close proximity to people and places. In addition, the effect of alternative silvicultural thinning prescriptions on the hot spots of treatment opportunity can be evaluated relative to acres, biomass yields, fire effects, and harvest profitability (under development).

### The Use

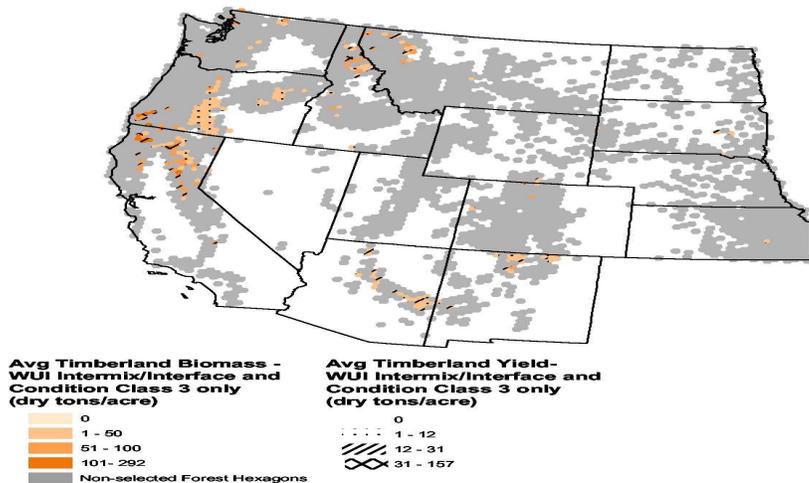
As an example of FTE outputs, the 15 western states encompass almost 1 billion acres of land, a quarter of which is forestland. Slightly more than half of the forested area (130 million acres) is classified as productive forests (timberland). Treatment opportunities exist on three-quarters of the timberland base, providing a potential yield of 2.3 billion dry tons from a standing inventory of almost 6.4 billion dry tons under the default silvicultural prescription.



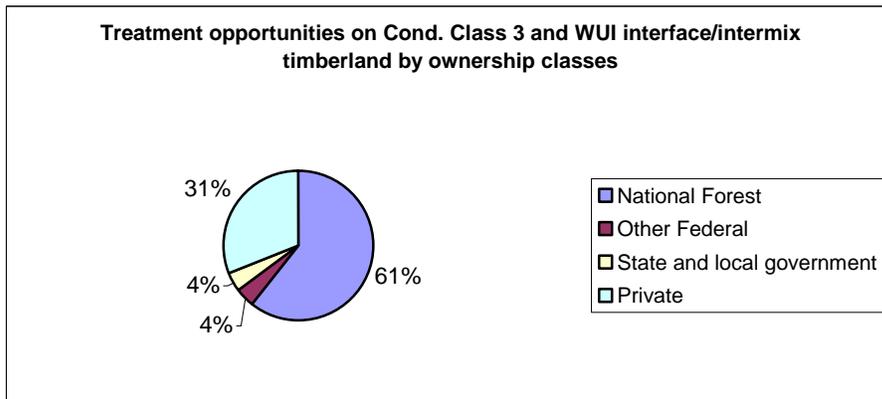
Overlaying the Fire Regime Current Conditions map and focusing only on areas in need of mechanical fuel reduction treatments before fire can be used as a restorative tool (Condition Class 3) allows identification of those areas in greatest need of fuel reduction treatments that also have potential for the greatest yields. These hot spots of treatment opportunity encompass 27 million acres of timberland with a potential yield of 583 million dry tons.



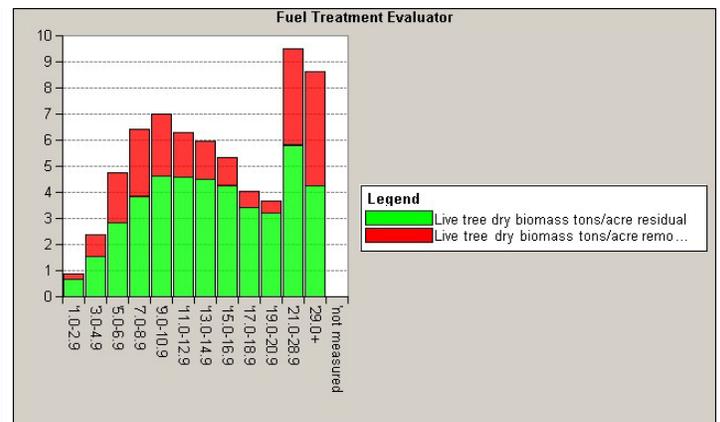
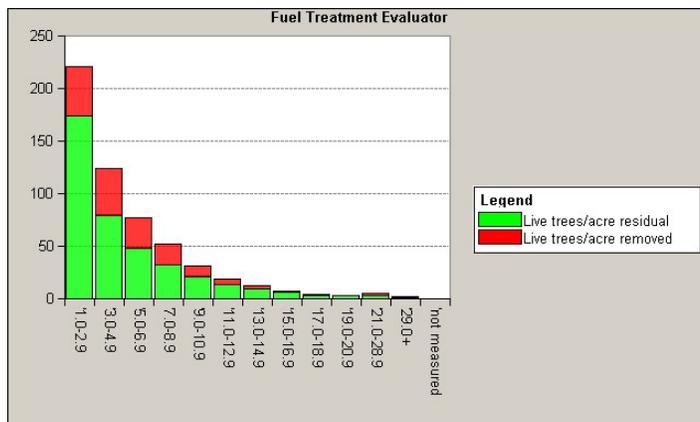
Overlaying the WUI map on these hot spots and focusing only on areas classed as urban interface or intermix allows identification of those areas in greatest need of fuel reduction treatments that are also in close proximity to people and places. These highest-priority hot spots encompass 13 million acres of timberland with a potential yield of 284 million dry tons.



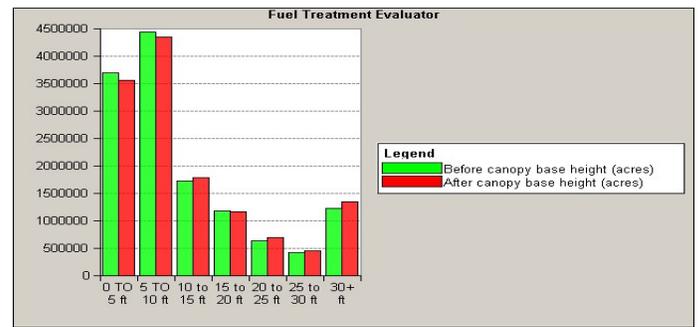
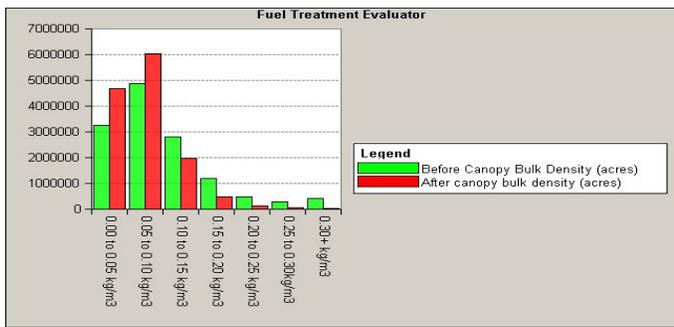
About 60% of the highest-priority hot spots are on National Forest lands.



Before and after effects of the selected silvicultural treatment on stand structure, biomass yields, residual biomass, fire effects, and harvest profitability (being developed) can be evaluated from the outputs. The distributions of removed and residual biomass by diameter class shows ample opportunities for small-diameter utilization.



The lowering of crown bulk density and raising of canopy heights indicate a lower risk to crown fires after treatment.



With multiple runs the effects of favoring smaller or larger diameter trees under alternative silvicultural prescriptions could be compared.

**The Details**

**Fuel Treatment Evaluator Area Statistics (in million acres) by State – Default Fuel Reduction Treatment**

State	Land area	Forestland	Timberland	Timberland with treatment opportunities	Treatment opportunities on Cond. Class 2 & 3 Timberland	Treatment opportunities on Cond. Class 3 Timberland	Treatment opportunities on WUI Interface and Intermix classes	Treatment opportunities on WUI Interface and Intermix classes & Cond. Class 3
AZ		72.7	19.4	3.5	3.0	2.8	1.8	0.6
CA		99.8	40.2	17.8	13.7	12.1	5.6	2.1
CO		66.4	21.6	11.6	8.8	5.4	2.3	1.7
ID		53.0	21.6	16.8	11.2	7.7	3.2	2.1
KS		52.4	1.5	1.5	1.3	0.4	0.1	0.1
MT		93.2	23.3	19.2	13.8	9.1	3.6	2.3
NE		49.2	0.9	0.9	0.8	0.2	0.0	0.0
NV		70.3	10.2	0.4	0.2	0.1	0.0	0.0
NM		77.7	16.7	4.4	3.6	3.1	2.0	1.1
ND		44.2	0.7	0.4	0.4	0.0	0.0	0.0
OR		61.4	29.7	23.8	16.3	11.7	5.3	1.5
SD		48.6	1.6	1.5	1.0	0.8	0.5	0.4
UT		52.6	15.7	4.7	3.5	1.1	0.1	0.0
WA		42.6	21.8	17.3	12.2	8.3	2.4	1.2
WY		62.1	11.0	5.7	3.7	1.8	0.3	0.1
Total		946.1	236.0	129.6	93.5	64.6	27.4	13.4

**Fuel Treatment Evaluator Biomass Statistics (in million dry tons) by State -- Default Fuel Reduction Treatment**

State	Biomass on timberland	Biomass on treatable timberland					Potential yield from treatable timberland				
		All conditions	Condition class 2 & 3	Condition class 3	WUI Interface & Intermix classes	Condition class 3 and WUI Interface & Intermix classes	All conditions	Condition class 2 & 3	Condition class 3	WUI Interface & Intermix classes	Condition class 3 and WUI Interface & Intermix classes
AZ	138.3	131.9	124.3	83.4	46.8	28.3	51.0	47.9	33.5	17.9	11.6
CA	1,328.3	1,265.5	1,103.4	489.5	591.0	198.1	502.8	429.0	176.7	240.5	72.1
CO	453.7	420.3	254.2	118.7	295.6	85.8	133.6	79.4	39.1	93.7	28.7
ID	772.3	690.2	490.8	214.9	445.2	137.2	208.8	155.3	70.5	134.2	44.9
KS	52.4	51.0	13.4	5.6	14.1	2.9	19.6	5.1	2.2	5.4	1.0
MT	733.7	673.8	474.6	193.1	434.4	118.9	212.9	146.4	61.4	136.8	37.6
NE	31.2	30.1	6.6	1.2	10.4	0.6	11.7	2.6	0.5	3.8	0.3
NV	11.9	9.8	6.2	2.1	8.2	1.5	2.9	1.9	0.5	2.4	0.4
NM	154.8	144.9	124.5	82.8	78.4	45.0	42.0	36.4	23.9	23.9	13.6
ND	14.0	13.5	0.8	0.1	5.6	0.0	5.3	0.3	0.1	2.2	0.1
OR	1,629.3	1,521.8	1,027.5	348.0	545.9	124.9	618.8	413.0	106.3	197.2	37.7
SD	39.9	33.2	27.4	18.6	22.9	13.5	7.4	5.3	3.6	4.5	2.5
UT	155.8	143.1	42.2	3.9	75.2	2.7	49.0	14.2	1.6	25.3	1.2
WA	1,159.2	1,096.1	717.1	190.5	477.1	99.3	394.5	253.1	57.5	163.5	29.9
WY	197.9	179.7	82.2	17.2	105.0	7.1	55.6	26.2	5.4	31.3	2.2
Total	6,872.7	6,404.9	4,495.3	1,769.7	3,155.7	865.9	2,315.9	1,616.1	582.8	1,082.7	283.9

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