

**2015 Forest and Rangeland Assessment proposed indicators (by Montreal Process Criteria) v 20150617**

Montreal Process Criteria, with total proposed number of indicators (#):

- |   |             |
|---|-------------|
| 1. Conservation of Biological Diversity   | (11)        |
| 2. Maintenance of Productive Capacity of Forest Ecosystems  | (8 (+1))    |
| 3. Maintenance of Forest Ecosystem Health and Vitality  | (13 (+1))   |
| 4. Conservation and Maintenance of Soil and Water Resources   | (7 (+1))    |
| 5. Maintenance of Forest Contribution to Global Carbon Cycles   | (10 (+2))   |
| 6. Maintenance and Enhancement of Long-term Multiple Socio-Economic Benefits to Meet the Needs of Society | (19 (+6))   |
| 7. Legal, Institutional and Economic Framework for Forest Conservation and Sustainable Management         | (6)         |
| <i>Total proposed indicators:</i>   | <i>(74)</i> |

(\* in tables below indicates tentative given data availability, and/or several metrics are to be included per indicator)

(Indicators below are indexed by Assessment chapter topic (see other handout))

<b>1. Conservation of Biological Diversity (Proposed Indicators)</b>	
6.3	Area of conversions from forest and rangeland to development
6.4	Forest and rangelands available to new development
6.5	Recent and projected population trends (also MPC 2)
6.7	Land tenure, land use, and ownership patterns by land size classes (fragmentation)*
9.4	Biologic Integrity Index for forest streams- CA Stream Condition Index (also MPC 4)
10.1	Habitat Structure (for wildlife): Extent of forest and rangeland vegetation types by size class over time. (also MPC 3)
10.2	Habitat Pattern (for wildlife): Total forest area
10.3	Habitat Pattern (for wildlife): Fragmentation by development and road density
10.4	Habitat Composition (for wildlife): Forest and rangeland vegetation types that are vulnerable to type conversion, based on management status and ownership.
10.5	Habitat Change (for wildlife): Shift in extent of natural vegetation types and/or specific forest tree species
10.6	Habitat Occupancy (for wildlife): The number of species of greatest conservation need (SGCN) (includes California state listed threatened & endangered (T&E), rare, endemic, vulnerable, species of special concern and USFS and BLM managed indicator species) by taxa.

<b>2. Maintenance of Productive Capacity of Forest Ecosystems (Proposed Indicators)</b>	
1.4	Net growth of growing stock on timberland, and net growth to removals to removals ratio
1.5	Area and percent of timberland by management regime
1.6	Hauling distance from timberland to nearest operating mill
2.1	Rangeland conversion (vegetation types and land use)
2.2	Rangeland ownership and uses
2.4	Number and distribution of livestock on rangeland (also MPC 6)
5.4	Forest pest risk to forest land (area and volume)*
5.5	Ozone-damaged trees (area and volume)*

<b>3. Maintenance of Forest Ecosystem Health and Vitality (Proposed Indicators)</b>	
1.3	Acreage of timberland in need of restoration treatment to reduce or increase stocking
4.1	Amount of wildfire by fuel type/bioregion
4.2	Vegetation burn severity
4.3	Fire Regime Interval Departure (FRID)
4.4	Amount of fuel treatment acres by treatment type and fuel type.
4.5	Frequency of severe fire weather days
4.6	Length of fire season*
5.1	Area and volume of forestland at risk of > 1% mortality in the next 15 years.
5.2	Area of tree mortality from insects, diseases, and other damaging agents on forest lands in California
5.3	Number of native and exotic pests that occur on forest lands in California*
5.6	Trends of air pollution levels (expressed in non-attainment days)
6.6	Land Coverage and Population (historic trends in population, forested land, land cover, and impervious cover in the watershed)*
12.2	Number of biomass facilities in California that primarily utilize forest biomass source materials (also MPC 6)

<b>4. Conservation and Maintenance of Soil and Water Resources (Proposed Indicators)</b>	
3.2	Impervious surfaces (percent of urban area)
9.1	Snow pack – April 1st (percent of normal) (also MPC 5)
9.2	Spring runoff from major watersheds (also MPC 5)
9.3	Cumulative water deficit
9.5	Extent of forest in riparian zones
9.6	Extent of upland meadows - encroachment from forests*
9.7	Erosional potential*

<b>5. Maintenance of Forest Contribution to Global Carbon Cycles (Proposed Indicators)</b>	
1.1	Total forest ecosystem carbon pools and changes
1.2	Total forest product carbon pools and changes
3.4	Days over 90 degrees Fahrenheit (F) (also MPC 6)
7.1	Annual average temperature departure from long term average by ecosystem units.
7.2	Annual average precipitation departure from long term average by ecosystem units
7.3	Summer average temperature departure from long term average by ecosystem units.
7.4	Winter average low temperature departure from long term average by ecosystem units.
12.1	Contribution of forest biomass to California electricity generation (also MPC 6)
12.3	Acres of California forestland being managed as carbon offset projects (also MPC 6)
12.4	Contribution of renewable energy sources to California electricity generation (also MPC 6)

<b>6. Maintenance and Enhancement of Long-term Multiple Socio-Economic Benefits to Meet the Needs of Society (Proposed Indicators)</b>	
1.7	Amount of timberland managed under forest certification, or other sustainable forestry standards
3.1	Tree canopy cover
3.3	Air Pollution (PM 2.5 and ozone standards)
6.1	Percent of private forest and rangeland currently under conservation easements
6.2	Percent of private forest and rangeland currently under Williamson Act contracts or Timber Production Zone restrictions
8.1	Population characteristics*
8.2	Livelihoods*
8.3	Economic diversity*
8.4	Income distribution*
8.5	Well-being and social change*
11.1	Number of structures and population in the WUI (Interface and Intermix)
11.2	Population and structures potentially at risk from wildland fire
11.3	Number of structures lost to wildfire per year
11.4	Number and percent of Communities at Risk (CAR) that are also Firewise Communities or are covered by a Community Wildfire Protection Plan (CWPP)
13.1	Revenue generated by recreation, outdoor education, and tourism industries
13.2	Outdoor recreation on forests and rangelands by provider and location
13.3	Recreation Visitor Days vs. Visits
13.4	Percent and area of private land under conservation and available for public use
13.5	Percent and area of private land under conservation status versus Percent and area of private land under conservation and available for public use

<b>7. Legal, Institutional and Economic Framework for Forest Conservation and Sustainable Management (Proposed Indicators)</b>	
1.8	Dollars and acres of timberland served by landowner assistance programs, by program type and funded activities
2.3	Federal grazing allotments
2.5	Area of rangeland under conservation ownership or co-management by conservation organizations
2.6	Amount of rangeland covered by Williamson Act contracts
2.7	Technical and financial assistance programs available to ranchers (\$, # projects, total acres)
13.6	Funding for Parks, recreation, open space acquisition