Uneven-aged Working Group-

Prepared by George Gentry (4/06/2020 update)

Group convened via Zoom conference March 31. Generally, the discussions have centered around gaining control of species composition. In the Sierra-Cascade region shade tolerant species now dominate many areas. Many industrial landowners and all NTMP landowners are committed to using uneven aged management systems. These systems, however, may limit the ability of shade intolerant species to regenerate. Also, part of this discussion has been the work by Rob York and Brandon Collins regarding encouraging “clumpiness” of the stand to mimic more natural conditions. Much of this issue relates to encouraging a more resilient species composition mix to better withstand climate change and fire.

* + **First agenda topic: Group selection issues**
		- The group discussed utilization of openings larger than those contemplated by the forest practice rules. Currently the rules provide for openings of up to 2.5 acres, but the group contemplated the potential of utilizing group openings of up to five acres. The rationale for this was that on some areas larger openings might have more efficacy. Examples given included utilization of group selection in cable logging.
		- The group discussed unique situations involving third generation entries into areas previously harvested under group selection. The issue discussed was whether adjacent areas that have suitable minimum stocking but don't meet the basal area requirements might be able to utilize the standard identified under commercial thin for trees less than 14 inches diameter breast height.
		- The group discussed utilising more group openings then the 20% contemplated by the rules. Discussion centered around moving this standard to approximately 1/3 of the stand.

**Selection Rules for reference:**

**913.2, 933.2, 953.2 Regeneration Methods Used in Unevenaged Management [All Districts, Note variations by District in (a)(2)(A)(1), (b)(6)]**

Unevenaged management is utilized to establish and maintain an unevenaged stand structure. Unevenaged management attributes include the establishment and/or maintenance of a multi-aged, balanced stand structure, promotion of growth on leave trees throughout a broad range of diameter classes, and encouragement of natural Reproduction.

**(a) Selection** Under the selection regeneration method, the trees are removed individually or in small groups sized from one-quarter (.25) acres to two and one-half (2.5) acres.

**(1)** Trees to be harvested or trees to be retained shall be Marked by or under the supervision of the RPF prior to felling operations. When openings greater than one-quarter (.25) acres will be created, the boundaries of the Small Group(s) may be designated in lieu of marking individual trees within the Small Group areas. A sample area must be Marked prior to a preharvest inspection for evaluation. The sample area shall include at least ten (10) of the Harvest Area up to a maximum of twenty (20) acres per stand type which is representative of the range of conditions present in the area.

**(2)** Post-harvest stand stocking levels shall be stated in the THP. The level of residual stocking shall be consistent with maximum sustained production of high quality timber products. In no case shall stocking be reduced below the following standards:

**(A)** Selection System.

**1. [Coast]** On Site I lands at least one hundred twenty-five (125) square feet per acre of basal area shall be retained.

**1. [Northern, Southern]** On Site I lands at least one hundred (100) square feet per acre of basal area shall be retained.

**2.** On Site II and III lands at least seventy-five (75) square feet per acre of basal area shall be retained.

**3.** On Site IV and V lands at least fifty (50) square feet per acre of basal area shall be retained.

**4.** Unless the plan submitter demonstrates how the proposed harvest will achieve MSP pursuant to 14 CCR § 913.11 [933.11, 953.11] (a) or (b), the residual stand shall contain sufficient trees to meet at least the basal area, size, and phenotypic quality of tree requirement specified under the Seed Tree method.

**(B)** Group Selection.

**1.** At least eighty (80) percent of the stocked plots must meet the Basal Area Stocking Standards of 14 CCR § 913.2(a)(2)(A), [933.2(a)(2)(A); 953.2(a)(2)(A)].

**2.** Not more than 20% of the stocked plots may meet Stocking Standards utilizing the standards of 14 CCR § 912.7(b)(1), [932.7(b)(1); 952.7(b)(1)] with trees that are at least ten (10) years old.

**3.** An RPF or Supervised Designee may offset up to eight (8) plots per forty (40) plots where those plot centers are initially placed within small group clearings created during the current harvest. Unless substantially damaged by fire, the RPF or supervised designee shall not exclude small group clearings created by previous timber harvesting from the stocking survey.

**4.** Unless the plan submitter demonstrates how the proposed harvest will achieve MSP pursuant to 14 CCR § 913.11 [933.11, 953.11 ] (a) or (b), the residual stand shall contain sufficient trees to meet at least the basal area, size, and phenotypic quality of tree requirements specified under the seed tree method.

**(3)** Within any THP, small group clearings under the selection method shall be separated by a logical logging area.

**(4)** Following completion of Timber Operations (including Site Preparation) not more than twenty (20) percent of the THP area harvested by this method shall be covered by small group clearings.

**(5)** Exceptions to stocking standards in 14 CCR § 913.2(a)(2), [933.2(a)(2), 953.2(a)(2)] above may be granted only when proposed by the RPF and explained and justified in the plan, but in no case will the exceptions be less than specified in 14 CCR § 912.7 (b)(2), [932.7(b)(2), 952.7(b)(2)]. Exceptions may only be granted when the RPF clearly demonstrates that the existing stand will grow substantially less than both the potential site productive capacity and the proposed post-harvest stand.

**Reference from paragraph above:**

**912.7, 932.7, 952.7 Resource Conservation Standards for Minimum Stocking [All Districts, Note variation by District in (b)(1), (b)(1)(C), (b)(1)(D)]**

**(b)** An area on which Timber Operations have taken place shall be classified as acceptably stocked if either of the standards set forth in (1) or (2) below are met within five (5) years after completion of Timber Operations unless otherwise specified in the Rules.

**(2)** The average residual basal area measured in stems one (1) inch or larger in diameter, is at least eighty-five (85) square ft. per acre on Site I lands, and fifty (50) square ft. per acre on lands of Site II classification or lower. Site classification shall be determined by the RPF who prepared the plan.

* + **Second agenda topic: Transition method**
		- The group discussed utilizing the transition method in areas of single tree selection. This would mean using this expanding this method to not only encourage uneven age structure, but to gain control of species composition (see opening remarks). This could also apply in certain coastal areas, according to those RPFs practicing there. After much discussion, it was concluded that a field tour would probably be needed to demonstrate how and when this prescription could be applied.

**Transition Silviculture Potential Changes as discussed:**

1. Eliminate the upper limit of stocking, which is presently 150 sq. ft. BA/ac for Site I and 125 sq. ft. BA/ac for Site II, III, IV, and V. *Allows for transitioning overstocked mixed conifer forests dominated by white fir back to ponderosa pine dominated stands.*
2. Reduce Site I stocking level from current 85 to 50 sq. ft. BA/ac. A*llows more flexibility and more incentive to practice unevenaged management on the best sites. This would be the one FPR standard that should be examined as potentially being too high for Selection.*
3. Allow up to 35% of the area in group clearings with a requirement for immediate postharvest restocking of groups with appropriate species to meet point count stocking within 5 years if more than 20% of the area is harvested in groups. A*llows more area to be actively regenerated with the proper species.*
4. Remove the requirement for Selection regeneration method after two subsequent Transition entries. *Allows for more flexibility in transitioning stands to a more regulated unevenaged state, and also allows for adaptive management as current research is indicating maintaining lower standing inventory levels for more drought and fire resiliency, which reflects data from pre-fire suppression stands and also more allowance for clumpy/gappy stand structures such as described in the ICO Guide. High stocking levels may not lead to Maximum Sustained Production if mortality is increased due to high levels of competition for soil moisture.*

**Transition Rules for reference**

**(b) Transition.** The transition method may be used to develop an unevenaged stand from a stand that currently has an unbalanced irregular or evenaged structure. The transition method involves the removal of trees individually or in small groups from irregular or evenaged stands to create a balanced stand structure and to obtain natural Reproduction.

**(1)** Area for determination of preharvest seed tree retention levels shall be no greater than twenty (20) acres in size.

**(2)** This method is to be used to increase stocking and improve the balance of age classes so as to allow the residual stand to be managed by the selection regeneration method. This method shall not be used more than two (2) times for a stand. The RPF shall delineate areas previously treated by the transition method on the plan map.

**(3)** Stands suitable for the transition method contain adequate quantity and quality of seed producing trees to provide adequate regeneration for new age classes. Stands suitable for this method shall have no more than fifty (50) sq. ft. of basal area greater than the selection basal area standards.

**(4)** Trees to be harvested or trees to be retained shall be Marked by or under the supervision of a RPF before felling operations. A sample area must be Marked before the preharvest inspection for evaluation. The sample area shall include at least ten (10) percent of the harvest area up to a maximum of twenty (20) acres per stand type which is representative of the range of conditions present.

**(5)** Immediately following the completion of Timber Operations, the minimum basal area standards in 14 CCR § 912.7(b)(2), [932.7(b)(2), 952.7(b)(2)] shall be met.

**(6) [Coast only]** The post-harvest residual stand shall contain at least fifteen (15) square feet of Basal Area Per Acre of Seed Trees at least twelve (12) inches d.b.h. or greater for timber Sites I, II or III; or 12 square feet of Basal Area Per Acre of Seed Trees twelve (12) inches d.b.h. or greater for timber Sites IV or V., except for timber sites I with Coast Redwood. For timber sites I with Coast Redwood, the post-harvest residual stand shall contain sufficient Seed Trees to meet at least the basal area, size and phenotypic quality of the leave tree requirements specified under the Seed Tree method (14 CCR § 913.1(c)(1)(A)). Unless obviously stocked, these basal area requirements will be determined from sampling averaged across each harvested area required in 14 CCR § 913.2(b)(1). Unless the plan submitter demonstrates how the proposed harvest will achieve MSP pursuant to 14 CCR § 913.11(a) or (b), where present in the preharvest stand, disease free, undamaged Seed Trees eighteen (18) inches d.b.h. or greater shall be retained post-harvest until the stand exceeds the minimum Seed Tree requirements of 14 CCR § 913.1(c)(1)(A). The Seed Trees shall be full crown, capable of seed production and representative of the best phenotypes available in the pre-harvest stand.

**(6) [Northern, Southern]** The post harvested residual stand shall contain at least fifteen (15) square feet of Basal Area Per Acre of Seed Trees at least twelve (12) inches d.b.h. or greater for timber Sites I, II or III; or twelve (12) square feet of Basal Area Per Acre of Seed Trees twelve (12) inches d.b.h. or greater for timber Sites IV or V. Unless obviously stocked, these basal area requirements will be determined from sampling averaged across each harvested area required in 14 CCR § 933.2(b)(1)[953.2(b)(1)]. Unless the plan submitter demonstrates how the proposed harvest will achieve MSP pursuant to 14 CCR § 933.11(a) or (b) [953.11(a) or (b)], where present in the preharvest stand, disease free, undamaged Seed Trees eighteen (18) inches d.b.h. or greater shall be retained post-harvest until the stand exceeds the minimum Seed Tree requirements of 14 CCR § 933.1(c)(1)(A) [953.1(c)(1)(A)]. The Seed Trees shall be full crown, capable of seed production and representative of the best phenotypes available in the present stand.

**(7)** Following completion of Timber Operations (including Site Preparation) not more than twenty (20) percent of the Plan area harvested by this method shall be occupied by Small Group clearings.

**(8)** The Plan Submitter must provide the Director sufficient information such as growth and stand description to demonstrate that the standards of the selection regeneration method will be met by the third and subsequent entries of Plan areas harvested by the transition method.

**(c)** Within six (6) months following completion of Timber Operations conducted pursuant to the selection and transition methods as described in the Plan, a report of Stocking shall be filed as stated in PRC § 4587.

**(d)** In the absence of a Sustained Yield Plan, to maintain and improve tree Species diversity, genetic material, and seed production, trees of each native Commercial Species where present at the time of harvest shall be retained after harvest. These leave trees shall be representative of the best phenotypes available in the preharvest stand. The RPF may propose and the Director may agree to a Species-specific plan in the THP which protects existing regeneration or provides for regeneration in-lieu of retaining trees.

* + **Alternative RX**
		- The group discussed the applicability of Alternative Prescription methodology in lieu of promulgating a new standard rule. It is theoretically possible, but general experience has been that such creative “non-standard” approaches are met with skepticism by reviewing agencies, which in turn leads to extended review times. Such review times are especially problematic for non-industrial landowners, who lack the staff and financial resources to undertake such an endeavor. It is potentially problematic for landowners committed to uneven age management under NTMPs and SYPs.

**Alternative Standards for reference**

**912.7, 932.7, 952.7 Resource Conservation Standards for Minimum Stocking [All Districts, Note variation by District in (b)(1), (b)(1)(C), (b)(1)(D)]**

**(e)** An RPF may propose an alternative stocking standard for any proposed regeneration method, intermediate treatment or special prescription.

**(1)** The proposed alternative shall not fall below resource conservation standards for minimum stocking described above. The proposed alternative stocking shall contribute to one (1) or more of the following forest health and ecological goals:

**(A)** Improved fire resilience; or

**(B)** Increased drought tolerance; or

**(C)** Improved forest pest and disease resistance; or

**(D)** Increased carbon sequestration rates and climate benefits related to forests and durable wood products; or

**(E)** Appropriate stocking for resilient forests in a changing climate; or

**(F)** Avoidance of large-scale disturbances which promote homogeneity in forests.

**(2)** The RPF shall describe the management objective for the stand, state the alternative stocking standard for the proposed regeneration method, intermediate treatment or special prescription and explain and justify the proposed alternative stocking standard by providing the following information:

**(A)** Site specific characteristics including site class, aspect, soil type, elevation, slope, understory shrub composition, and a general discussion of available water in the soil.

**(B)** Economic factors supporting the proposed alternative and associated risks if the alternative stocking is not implemented.

**(C)** A description of the current Harvest Area, including species composition and current Stocking measured using the applicable basal area method.

**(D)** A discussion of the projected post-harvest species composition and Stocking using the same measure of Stocking used for the description of the current stand.

**(E)** A discussion of how the proposed alternative stocking will contribute to the Board’s forest health and ecological goals of 14 CCR § 912.7 [932.7, 952.7] (e)(1)(A)-(F).

**(F)** A description of stand maintenance and vegetation treatments that will be applied where necessary to ensure suitable resource conservation and site occupancy post-harvest.

**(3)** The proposed alternative stocking area shall be inspected on site by the Director. A sample Mark may be required based upon the type of harvest. The Director will verify on-site conditions and certify that the proposed alternative Stocking will contribute to one or more of the forest health and ecological goals identified in 14 CCR § 912.7 [932.7, 952.7] (e)(1)(A)-(F). The Director may approve the proposed alternative if the intent of the Act and the Rules will be met, and there will not be immediate or long-term significant harm to the natural resources of the state.

**913, 933, 953 Silvicultural Objectives [All Districts]**

The objectives of this article are to describe standard silvicultural systems and to provide for alternatives that when applied shall meet the objectives of the FPA (PRC 4512 and 4513). The RPF shall select systems and alternatives which achieve maximum sustained production of high quality timber products. The THP shall designate one or a combination of regeneration methods, prescriptions or intermediate treatments described by this article. If a method, prescription or treatment not defined in the Rules (see 14 CCR 895.1) is to be used, an alternative prescription shall be included in the plan.

**913.6, 933.6, 953.6 Alternative Prescriptions [All Districts]**

**(a)** An alternative prescription shall be included in a THP when, in the judgment of the RPF, an alternative regeneration method or intermediate treatment offers a more effective or more feasible way of achieving the objectives of Section 913 [933, 953] than any of the standard silvicultural methods provided in this Article.

**(b)** An alternative prescription, as defined in 14 CCR 895.1, shall normally contain at least the following information:

**(1)** A description of the stand before Timber Operations, including:

**(A)** The RPF's professional judgment of the species composition of the stand before harvest.

**(B)** The RPF's professional judgment of the current stocking on the area expressed in basal area or a combination of basal area and point count.

**(C)** The RPF's estimate of the Basal Area Per Acre to be removed from the stand during harvest.

**(2)** A description of stand management constraints such as animal, insect, disease, or other natural damage, competing vegetation, harsh site conditions, or other problems which may affect stand management.

**(3)** A statement of which silvicultural method in the current District Rules is most nearly appropriate or feasible and an explanation of why it is not appropriate or feasible.

**(4)** An explanation of how the proposed alternative prescription will differ from the most nearly feasible method in terms of securing regeneration; protection of soil, water quality, wildlife habitat, and visual appearance; and in terms of fire, insect and disease protection.

**(5)** A description of the stand expected after completion of Timber Operations, including the following:

**(A)** The management objective under which the post-harvest stand is to be managed (evenaged, unevenaged, or neither);

**(B)** The desired tree species composition of the post-harvest stand and the RPF's judgment as to the remaining stocking after harvest expressed as basal area or a combination of basal area and point count.

**(6)** The treatment of the stand to be used in harvesting including:

**(A)** The guidelines to be used in determining which trees are to be harvested or left;

**(B)** The type of field designation to be followed, such as marking, sample marking of at least 20 percent of the trees to be harvested or left, professional supervision of fallers or other methods; and

**(C)** The Site Preparation and regeneration method and timetable to be used for restocking.

**(c)** If an alternative prescription will have the practical on-the-ground effect of a clearcut, regardless of name or description, then the acreage limitations, and requirement for separation by a typical logging unit, Yarding equipment limitations, exceptions, and stocking requirements for the clearcut regeneration method shall apply.

**(d)** All trees to be harvested or all trees to be retained shall be marked by, or under the supervision of, an RPF prior to harvest. A sample area must be marked prior to the preharvest inspection for evaluation. The sample area shall include at least 10% of the harvest area to a maximum of 20 acres per stand type which is representative of the range of conditions present in the area. The Director may waive the requirements for the remainder of the area when explained and justified by the RPF in the THP.

**(e)** The Director shall approve the alternative if in his judgment it complies with 14 CCR 898 and if, considering the entire area to which the alternative is to be applied, it would:

**(1)** When compared with the standard method identified in subsection (b)(3) above have an effect equal to or more favorable than such standard method would achieve in the areas of values relating to soil, the quality and beneficial uses of water, wildlife and fisheries,

**(2)** Not create a significant adverse change in range and forage, and recreation and aesthetic values; and

**(3)** Not reduce the after harvest stocking standards or evenaged prescription limitation below the most closely associated standard, unless the RPF demonstrates that either:

**(A)** The harvest will result in stand conditions that will increase long term sustained yield as compared to the long term sustained yield achieved by utilizing the stocking standards of the method identified in subsection (b)(3); or

**(B)** The yield over 20 years of a "No Harvest" alternative would be less than the yield over 20 years of the proposed alternative.

**(4)** Not lead to the direct or indirect conversion of the Timberland to other land uses not associated with timber growing and harvesting and compatible uses unless a Timberland Conversion Permit is approved before submission of the THP; and

**(5)** Not result in violations of any of the other standards in the Rules of the Board.

* + **Issues to be discussed at next meeting**
		- The group will convene again following this month’s BOF meeting. Issues still to be covered include the following:
	+ Technical issues:
		- Allow for basal area credit hardwoods as well as snags (like current oak silviculture standard). Allow for lower snag standards.
		- Allow for more flexibility in group B justification- like current oak standards.
		- Rules do not reflect heterogeneity in many stands.
		- More flexibility for plan submitters on the “8 18” rule to allow for better spacing.

Added to the above are two potential issues from Forest Practice Committee priorities that will be added to the Transition discussion above:

**14 CCR § 913.4(d) - Variable Retention Silviculture:**

***Objective:*** *Several questions have been raised regarding implementation of this Special Prescription: (1) Should the Variable Retention regulation specify a minimum re-entry period for designated retention areas?; (2) Should the current regulation require a minimum stand age necessary for harvest to occur in order to demonstrate maximum sustained production (MSP) as is required for even-age silviculture under 14 CCR § 913.11(c)?; and (3) Are the minimum stocking requirements of CCR § 913.4 (d)(3)(H) relative to aggregate versus dispersed retention clear enough for consistent application and enforcement?*

***Status:*** *No reportable actions were made on this topic in 2019.*

**14 CCR § 913.2 (b) – Transition Silviculture :**

***Objective:*** *It has been reported that CAL FIRE does not allow use of the Transition silviculture method in timber stands which were most previously harvested utilizing the Selection method. This ‘policy’ is not consistent with 14CCR § 913.2(b) or (b)(2). THP was returned on this issue without being evaluated through PHI to support the determination.*

***Status:*** *No reportable actions were made on this topic in 2019.*

* + **Next steps:**
		- Conduct follow up meetings regarding the issues above
		- Develop a problem statement based on all input
		- Develop and incorporate a panel of researchers to help determine validity and scientific justification
		- If determined to be a regulatory issue, develop potential rule language for BOF committee consideration