PACIFIC FOREST TRUST

January 5, 2022

Chair Liane M. Randolph
California Air Resources Board
PO Box 2815
Sacramento, CA 95812

RE: Recommendations on Scenarios for Natural and Working Land Modeling for the Scoping Plan Update

Thank you for the opportunity to provide feedback on the range of scenarios being modeled to inform the natural and working land strategies in the Scoping Plan Update. We appreciate and support ARB's approach of having a broad range of scenarios to highlight where there are opportunities to make significant increases in carbon stocks and improvements in resilience to disturbance.

Commenting on the scenarios has been challenging due to the extraordinarily vague descriptions of modeling assumptions. While we appreciate ARB staff making themselves available for conversations, the lack of any meaningful written description (beyond PPT slides) of the modeling assumptions make comment on the super-brief scenarios even more difficult.

Our comments are focused on forests, which are the largest and most expandable portion of ecosystem carbon, containing over 85% of the biological carbon. Within the forest sector private commercial forestland owners generally have the most productive forestland and hold the majority of private forests, and past management has reduced stocks so these forests generally hold a fraction of the carbon they are biologically capable of storing. Unfortunately, while most private forests hold a fraction of their potential carbon, the high density of smaller trees, lack of large old trees, and simplified forest structure have created a high-risk condition that is unnatural, unstable, and extremely vulnerable to pests and extreme uncharacteristic fire behavior. Restoring more resilient forests, with greater carbon stocks and increased structural complexity, will reduce those risks while also improving watershed function, habitat value, and fire resilience, especially if implemented at scale across large watershed areas.

Restoring carbon-rich and climate-resilient conditions to California's forests will take time, both to implement the various treatments that can put forests on a trajectory toward more natural spacing and structure, but also to allow the trees to grow and mature. Restoring desired conditions needs to be planned over many decades (or centuries), and the trajectory secured with policy instruments that ensure that future harvest actions don't entirely negate progress. In forests, growth (sequestration) is slow and consistent, harvest (emissions) is fast and

stochastic. Working forest conservation easements that ensure climate-smart management in perpetuity will be an essential tool to ensure California forests maintain the desired management trajectory in the face of the economic pressures of commercial timber management.

Forest-sector wide considerations:

1) Modeling should assume that private forests are generally harvested when they become commercially viable, though non-industrial private forestlands (NIPF) may persist longer on average. It is not clear how this is handled in the model – simply using the 2001-2014 baseline time period may not be an adequate representation of how economics drive timber harvest and forest management.
    a. For industrial owners in the Sierra/Cascade region, assume harvest around year 80 (for large majority of harvests). The large majority of this harvest will be clearcut.
    b. For industrial owners on the north coast, assume harvest around year 60 (for large majority of harvests). Compared to the northern interior, large industrial landowners on the north coast leave slightly more basal area post-harvest, more of a 'fuzzy clearcut', though still most-similar to a clearcut prescription for purposes of the model.
    c. Non-industrial landowners are often driven by values and considerations besides financial optimization. However just because it's a smaller non-industrial ownership today doesn't mean it won't be acquired by another owner in the future, because forestland regularly changes ownership. Large industrial landowners regularly acquire forestland to add to their holdings (and sell forestland assets). Perhaps the most dramatic example is Sierra Pacific Industries, which owned about 150,000 acres in 1988 and now owns over 2.3 million acres across California, Oregon, and Washington. Timberland is regularly bought and sold as a commodity, and current ownership is not determinative of future ownership.
    d. The average age of trees at harvest has declined every decade for the past 75 years, and we should assume that trend will continue, especially as new manufacturing techniques make smaller trees economically viable.
    e. While there are a great number of non-industrial forestland owners, landowners of 500 acres of more control the substantial majority (more than 2/3) of the non-industrial lands.

Sacramento Headwaters Focus Area

The source watersheds that supply Oroville, Shasta, and Trinity reservoirs (Feather, Upper Sacramento, Pit, McCloud and Upper Trinity rivers) are the backbone of the state's water supply and should receive focused attention from the state for climate mitigation and adaptation. It is also a biodiversity mecca, providing refugia for species impacted by climate change. California's climate initiative should include focused restoration and conservation

efforts in this region, consistent with the goals and principles outlined in the CSLS and Pathways to 30x30.

The forests in the region have enormous potential to increase their current carbon stores and the resiliency of these stores, and we urge ARB to model the following scenario as part of scenarios 2 & 3 ('Prioritizing restoration and climate resilience', and a 'Mix of strategies from current commitments/plans). This suite of actions intends to optimize watershed function and resiliency, facilitate biodiversity adaptation, and increase carbon stocks on the landscape while maintaining a thriving forest products industry in the region.

Across this 5-watershed region we request the following scenario be modeled, with the mechanical thinning actions implemented over the initial 10-year period, and the Rx fire ramping up over time to achieve the targeted 2.1M acres over 10 years.

TABLE 2. Forest restoration *(acre targets in italics)*

	FEATHER	MCCLOUD	PIT	UPPER SACRAMENTO	UPPER TRINITY	TOTAL
	ACRES					
Federal Forestland Area	1,150,018	201,859	1,205,802	163,391	241,704	2,962,774
Candidate Acres for Mechanical Thinning Operations	*465,224*	*82,231*	*612,245*	*58,406*	*71,388*	*1,289,494*
Candidate Acres for Restoration via Prescribed Fire[i]	*757,727*	*154,155*	*822,005*	*145,216*	*217,999*	*2,097,102*
Non-Federal Forestland Area	539,972	184,766	739,607	145,922	117,755	1,728,022
Candidate Acres for Restoration	*285,354*	*65,687*	*412,077*	*81,864*	*69,451*	*914,433*
All Candidate Acres for Restoration	***1,043,081***	***219,842***	***1,234,082***	***227,080***	*287,450*	*3,011,535*

i The initial reduction of stand density achieved by thinning is then maintained by regular prescribed fire in subsequent years, rather than by an on-going thinning regime.

(This and the following figures are excerpted from *A Risk Assessment of California's Key Watershed Infrastructure: Repair and Maintenance needs for the Feather, Pit, McCloud, Upper Sacramento and Upper Trinity River Watersheds*).

To the extent that the model can incorporate restoration of wet and dry meadows in upper watersheds, we urge you to incorporate the following restoration targets:

TABLE 3. Dry and wet meadow restoration

	FEATHER	MCCLOUD	PIT	UPPER SACRAMENTO	UPPER TRINITY	TOTAL
	ACRES					
Dry Meadows						
Federal	27,438	951	58,982	987	2,286	90,644
Candidates for Restoration	*27,438*	*951*	*58,982*	*987*	*2,286*	*90,644*
Non-Federal	38,123	1,400	55,357	2,123	1,422	98,425
Candidates for Restoration	*38,123*	*1,400*	*55,357*	*2,123*	*1,422*	*98,425*
Total	***65,561***	***2,351***	***114,339***	***3,110***	***3,708***	***189,069***
Wet Meadows						
Federal	18,332	234	51,177	520	2,230	72,493
Candidates for Restoration	*15,582*	*199*	*44,148*	*442*	*1,895*	*62,266*
Non-Federal	66,926	1,278	94,997	1,716	649	165,568
Candidates for Restoration	*56,887*	*1,087*	*80,759*	*1,459*	*552*	*140,744*
Total	***72,469***	***1,286***	***124,907***	***1,901***	***2,447***	***203,010***

ii This is exclusive of the miles of streams in wet meadows, which are included in the streams section.

Working forest conservation easements that ensure climate-smart management in perpetuity will be essential to achieve better climate outcomes and watershed function in the face of the economic pressures of commercial timber management. These "total acres to conserve by watershed" targets should be modeled at a lighter intensity of harvest than BAU, probably as "Harvest" rather than "Clearcut", and potentially with longer duration before re-entry.

TABLE 6. Watershed integrity, acres for conservation

	FEATHER	MCCLOUD	PIT	UPPER SACRAMENTO	UPPER TRINITY	TOTAL
Total Acres in Watershed	2,306,520	435,730	3,404,207	378,906	459,884	6,985,247
% Public Ownership	65%	53%	61%	57%	70%	62%
Acres Private Ownerships >500 Acres	538,410	192,810	1,082,917	119,955	122,573	2,056,665
Private Acres Already Conserved	37,816	28,819	32,896	2,104	2	101,637
Total Acres to Conserve as Watershed	***414,202***	***110,137***	***775,775***	***105,330***	***66,859***	***1,472,303***

Scenario-Specific Suggestions:

Scenario 3 – Mix of Strategies from Current Plans

The state's private forests represent our greatest opportunity to increase sequestration through changed management. Achieving the 30x30 goals will require roughly 8 million acres of

conservation; we suggest that focusing a disproportionate amount of that acreage on private timberland, and using working forest conservation easements that change management to increase sequestration over time, will help achieve state climate goals alongside the 30x30 goals.

Scenario 5 – Focus on Resource Utilization
Given that the scenarios are intended to represent a range of possible management outcomes, it makes sense to include a "maximum harvest" scenario. It would be useful to understand the impact of maximum legal harvest under California Forest Practice Rules. While this would have unacceptable cumulative impacts and ecological/hydrological outcomes, it would be informative to bracket the range of possibilities.

We look forward to ongoing conversation with ARB staff about the NWL model and scenarios. While we are very sympathetic to the challenge of public engagement during the pandemic, this process – from the challenging online workshop to the vague and undocumented modeling effort to the relatively short comment period over the holidays – has been particularly frustrating and unsatisfying.

Best wishes, and happy new year,

Paul Mason
V.P., Policy & Incentives
Pacific Forest Trust