Optimization Mini Model CMAI Run Breakdown:

**CMAIRuns (Run 1)**

* Total Acreage (Where 1240564 = total mini model acres x 4 periods)
  + 167N\_2021\_CMAI + 167N\_2021\_NMGT + 167N\_2025\_CMAI + 167N\_2025\_NMGT + 167N\_2030\_CMAI + 167N\_2030\_NMGT + 167N\_2050\_CMAI + 167N\_2050\_NMGT + 167S\_2021\_CMAI + 167S\_2021\_NMGT + 167S\_2025\_CMAI + 167S\_2025\_NMGT + 167S\_2030\_CMAI + 167S\_2030\_NMGT + 167S\_2050\_CMAI + 167S\_2050\_NMGT + 505\_2021\_CMAI + 505\_2021\_NMGT + 505\_2025\_CMAI + 505\_2025\_NMGT + 505\_2030\_CMAI + 505\_2030\_NMGT + 505\_2050\_CMAI + 505\_2050\_NMGT + 608\_2021\_NMGT + 608\_2025\_NMGT + 608\_2030\_NMGT + 608\_2050\_NMGT + 999\_2021\_NMGT + 999\_2025\_NMGT + 999\_2030\_NMGT + 999\_2050\_NMGT == + 1318480
* Yearly Acreages
  + YearlyAcreage\_2021
    - 167N\_2021\_CMAI + 167N\_2021\_NMGT + 167S\_2021\_CMAI + 167S\_2021\_NMGT + 505\_2021\_CMAI + 505\_2021\_NMGT + 608\_2021\_NMGT + 999\_2021\_NMGT == + 329,620
  + YearlyAcreage\_2025
    - 167N\_2025\_CMAI + 167N\_2025\_NMGT + 167S\_2025\_CMAI + 167S\_2025\_NMGT + 505\_2025\_CMAI + 505\_2025\_NMGT + 608\_2025\_NMGT + 999\_2025\_NMGT == + 329,620
  + YearlyAcreage\_2030
    - 167N\_2030\_CMAI + 167N\_2030\_NMGT + 167S\_2030\_CMAI + 167S\_2030\_NMGT + 505\_2030\_CMAI + 505\_2030\_NMGT + 608\_2030\_NMGT + 999\_2030\_NMGT == + 329,620
  + YearlyAcreage\_2050
    - 167N\_2050\_CMAI + 167N\_2050\_NMGT + 167S\_2050\_CMAI + 167S\_2050\_NMGT + 505\_2050\_CMAI + 505\_2050\_NMGT + 608\_2050\_NMGT + 999\_2050\_NMGT == + 329,620
* 505 Acreage by Year (Where 6515 acres = 5,197 state-owned acres + 20,797 stewardship acres)
  + 505Acreage\_2021
    - 505\_2021\_CMAI + 505\_2021\_NMGT == + 6515.0
  + 505Acreage\_2025
    - 505\_2025\_CMAI + 505\_2025\_NMGT == + 6515.0
  + 505Acreage\_2030
    - 505\_2030\_CMAI + 505\_2030\_NMGT == + 6515.0
  + 505Acreage\_2050
    - 505\_2050\_CMAI + 505\_2050\_NMGT == + 6515.0
* 167N Acreage by Year (Where 137,679 acres = 127,759 state-owned acres + 9,920 stewardship acres)
  + 167NAcreage\_2021
    - 167N\_2021\_CMAI + 167N\_2021\_NMGT == + 137679.0
  + 167NAcreage\_2025
    - 167N\_2025\_CMAI + 167N\_2025\_NMGT == + 137679.0
  + 167NAcreage\_2030
    - 167N\_2030\_CMAI + 167N\_2030\_NMGT == + 137679.0
  + 167NAcreage\_2050
    - 167N\_2050\_CMAI + 167N\_2050\_NMGT == + 137679.0
* 167S Acreage by Year (Where 122,092 acres = 113,295 state-owned acres + 8,797 stewardship acres)
  + 167SAcreage\_2021
    - 167S\_2021\_CMAI + 167S\_2021\_NMGT == + 122092.0
  + 167SAcreage\_2025
    - 167S\_2025\_CMAI + 167S\_2025\_NMGT == + 122092.0
  + 167SAcreage\_2030
    - 167S\_2030\_CMAI + 167S\_2030\_NMGT == + 122092.0
  + 167SAcreage\_2050
    - 167S\_2050\_CMAI + 167S\_2050\_NMGT == + 122092.0
* 608 Acreage by Year (Where 40,786 acres = 40,535 state-owned acres + 251 stewardship acres)
  + 608Acreage\_2021
    - 608\_2021\_NMGT == + 40786.0
  + 608Acreage\_2025
    - 608\_2025\_NMGT == + 40786.0
  + 608Acreage\_2030
    - 608\_2030\_NMGT == + 40786.0
  + 608Acreage\_2050
    - 608\_2050\_NMGT == + 40786.0
* 999 Acreage by Year (Where 3,069 acres = 2,440 state-owned acres + 629 stewardship acres)
  + 999Acreage\_2021
    - 999\_2021\_NMGT == + 3069.0
  + 999Acreage\_2025
    - 999\_2025\_NMGT == + 3069.0
  + 999Acreage\_2030
    - 999\_2030\_NMGT == + 3069.0
  + 999Acreage\_2050
    - 999\_2050\_NMGT == + 3069.0
* CMAI Cuts (Period cuts are based on dividing total acres of each forest type by 28 years, then adding them up for all CMAI managed FT; only cutting in 2021, 2015 & 2030; 505 = 224ac, 167N = 4,747ac, 167S = 4,210ac for a total of 9,181ac cut each year)
  + CMAI\_Cut\_2021
    - 167N\_2021\_CMAI + 167S\_2021\_CMAI + 505\_2021\_CMAI >= + 9181.0
  + CMAI\_Cut\_2025
    - 167N\_2025\_CMAI + 167S\_2025\_CMAI + 505\_2025\_CMAI >= + 36724.0
  + CMAI\_Cut\_2030
    - 167N\_2030\_CMAI + 167S\_2030\_CMAI + 505\_2030\_CMAI >= + 45905.0

**RESULTS:** we got optimized results, but it shows that we didn’t set up our constraints properly. Essentially, the model is cutting ALL ACRES of each forest type to CMAI every single year. It’s cutting the same forest 3 times over. Need to constrain more for Run #2.

== Variables

167N\_2021\_CMAI | 137679.0

167N\_2021\_NMGT | 0

167N\_2025\_CMAI | 137679.0

167N\_2025\_NMGT | 0

167N\_2030\_CMAI | 137679.0

167N\_2030\_NMGT | 0

167N\_2050\_CMAI | 0

167N\_2050\_NMGT | 137679.0

167S\_2021\_CMAI | 122092.0

167S\_2021\_NMGT | 0

167S\_2025\_CMAI | 0

167S\_2025\_NMGT | 122092.0

167S\_2030\_CMAI | 122092.0

167S\_2030\_NMGT | 0

167S\_2050\_CMAI | 0

167S\_2050\_NMGT | 122092.0

505\_2021\_CMAI | 0

505\_2021\_NMGT | 6515.0

505\_2025\_CMAI | 0

505\_2025\_NMGT | 6515.0

505\_2030\_CMAI | 0

505\_2030\_NMGT | 6515.0

505\_2050\_CMAI | 0

505\_2050\_NMGT | 6515.0

608\_2021\_NMGT | 40786.0

608\_2025\_NMGT | 40786.0

608\_2030\_NMGT | 40786.0

608\_2050\_NMGT | 40786.0

999\_2021\_NMGT | 3069.0

999\_2025\_NMGT | 3069.0

999\_2030\_NMGT | 3069.0

999\_2050\_NMGT | 3069.0

**CMAIRun2**

The only difference in this run is that for the CMAI cut constraints we changed the operator from greater than or equal to just equal to.

* CMAI Cuts (Period cuts are based on dividing total acres of each forest type by 29 years, then adding them up for all CMAI managed FT; only cutting in 2021, 2015 & 2030; 505 = 224ac, 167N = 4,747ac, 167S = 4,210ac for a total of 9,181ac cut each year)
  + CMAI\_Cut\_2021
    - 167N\_2021\_CMAI + 167S\_2021\_CMAI + 505\_2021\_CMAI == + 9181.0
  + CMAI\_Cut\_2025
    - 167N\_2025\_CMAI + 167S\_2025\_CMAI + 505\_2025\_CMAI == + 36724.0
  + CMAI\_Cut\_2030
    - 167N\_2030\_CMAI + 167S\_2030\_CMAI + 505\_2030\_CMAI == + 45905.0

**RESULTS:** It started to optimize for CMAI, but only did it for 167N, which we’re assuming has the lowest carbon co-efficient. We’re trying to force it to cut to CMAI in all years and in all forest types.

== Variables

167N\_2021\_CMAI | 9181.0

167N\_2021\_NMGT | 128498.0

167N\_2025\_CMAI | 36724.0

167N\_2025\_NMGT | 100955.0

167N\_2030\_CMAI | 45905.0

167N\_2030\_NMGT | 91774.0

167N\_2050\_CMAI | 0

167N\_2050\_NMGT | 137679.0

167S\_2021\_CMAI | 0

167S\_2021\_NMGT | 122092.0

167S\_2025\_CMAI | 0

167S\_2025\_NMGT | 122092.0

167S\_2030\_CMAI | 0

167S\_2030\_NMGT | 122092.0

167S\_2050\_CMAI | 0

167S\_2050\_NMGT | 122092.0

505\_2021\_CMAI | 0

505\_2021\_NMGT | 6515.0

505\_2025\_CMAI | 0

505\_2025\_NMGT | 6515.0

505\_2030\_CMAI | 0

505\_2030\_NMGT | 6515.0

505\_2050\_CMAI | 0

505\_2050\_NMGT | 6515.0

608\_2021\_NMGT | 40786.0

608\_2025\_NMGT | 40786.0

608\_2030\_NMGT | 40786.0

608\_2050\_NMGT | 40786.0

999\_2021\_NMGT | 3069.0

999\_2025\_NMGT | 3069.0

999\_2030\_NMGT | 3069.0

999\_2050\_NMGT | 3069.0

**CMAIRun3**

Added in all years by forest type as an additional constraint in an attempt to get CMAI cuts to happen across all forest types/years

* 167N\_AllYears (total 167N acres for mini model)
  + 167N\_2021\_CMAI + 167N\_2021\_NMGT + 167N\_2025\_CMAI + 167N\_2025\_NMGT + 167N\_2030\_CMAI + 167N\_2030\_NMGT + 167N\_2050\_CMAI + 167N\_2050\_NMGT == + 137679.0
* 167S\_AllYears (total 167S acres for mini model)
  + 167S\_2021\_CMAI + 167S\_2021\_NMGT + 167S\_2025\_CMAI + 167S\_2025\_NMGT + 167S\_2030\_CMAI + 167S\_2030\_NMGT + 167S\_2050\_CMAI + 167S\_2050\_NMGT == + 122092.0
* 505\_AllYears (total 505 acres for mini model)
  + 505\_2021\_CMAI + 505\_2021\_NMGT + 505\_2025\_CMAI + 505\_2025\_NMGT + 505\_2030\_CMAI + 505\_2030\_NMGT + 505\_2050\_CMAI + 505\_2050\_NMGT == + ~~6515.0~~ 25994.0
* 608\_AllYears (total 608 acres for mini model)
  + 608\_2021\_NMGT + 608\_2025\_NMGT + 608\_2030\_NMGT + 608\_2050\_NMGT == + ~~6515.0~~ 40786.0
* 999\_AllYears (total acres for mini model)
  + 999\_2021\_NMGT + 999\_2025\_NMGT + 999\_2030\_NMGT + 999\_2050\_NMGT == + 3069.0

**RESULTS:** ERROR – we broke the model with this one!

**CMAIRun2+**

In this run, I (attempted) to tell the model to cut a specific amount each year in each forest type

* 505CMAI by year (total 505 ac divided by ~~29~~ 30 years = ~~224~~ 866 acres cut per year)
  + 505CMAI\_2021
    - 505\_2021\_CMAI >= + ~~224.0~~ 866
  + 505CMAI\_2025
    - 505\_2025\_CMAI >= + ~~896.0~~ 3,464
  + 505CMAI\_2030
    - 505\_2030\_CMAI >= + ~~1120~~.0 4,330
  + 505CMAI\_2050
    - 505\_2050\_CMAI >= + ~~4480.0~~ 17,320
* 167N CMAI by year (total 167N ac divided by ~~29~~ 30 years = 4,589 acres cut per year)
  + 167NCMAI\_2021
    - 167N\_2021\_CMAI >= + 4589.0
  + 167NCMAI\_2025
    - 167N\_2025\_CMAI >= + 18056.0
  + 167NCMAI\_2030
    - 167N\_2030\_CMAI >= + 22945.0
  + 167NCMAI\_2050
    - 167N\_2050\_CMAI >= + 91780.0
* 167S CMAI by year (total 167N ac divided by 30 years = 4,069 acres cut per year)
  + 167SCMAI\_2021
    - 167S\_2021\_CMAI >= + 4069.0
  + 167SCMAI\_2025
    - 167S\_2025\_CMAI >= + 16276.0
  + 167SCMAI\_2030
    - 167S\_2030\_CMAI >= + 20345.0
  + 167SCMAI\_2050
    - 167S\_2050\_CMAI >= + 81380.0

**RESULTS:** Error!! The model is still broken, although I looked into it a little bit more and it looks like the acreage doesn’t all match up. We should have been dividing by 30 years, not 29!

**CMAIRun5**

I fixed the acreages for these ones!

* CMAI Cuts (Period cuts are based on dividing total acres of each forest type by 30 years, then adding them up for all CMAI managed FT; only cutting in 2021, 2015 & 2030; 505 = 224ac, 167N = 4,747ac, 167S = 4,210ac for a total of 9,181ac cut each year)
  + CMAI\_Cut\_2021
    - 167N\_2021\_CMAI + 167S\_2021\_CMAI + 505\_2021\_CMAI == + 8875.0
  + CMAI\_Cut\_2025
    - 167N\_2025\_CMAI + 167S\_2025\_CMAI + 505\_2025\_CMAI == + 35500.0
  + CMAI\_Cut\_2030
    - 167N\_2030\_CMAI + 167S\_2030\_CMAI + 505\_2030\_CMAI == + 44375.0
* 505CMAI by year (total 505 ac divided by 30 years = 217 acres cut per year)
  + 505CMAI\_2021
    - 505\_2021\_CMAI == + 217.0
  + 505CMAI\_2025
    - 505\_2025\_CMAI == + 868.0
  + 505CMAI\_2030
    - 505\_2030\_CMAI == + 1085.0
  + 505CMAI\_2050
    - 505\_2050\_CMAI == + 4340.0
* 167N CMAI by year (total 167N ac divided by 30 years = 4,589 acres cut per year)
  + 167NCMAI\_2021
    - 167N\_2021\_CMAI == + 4589.0
  + 167NCMAI\_2025
    - 167N\_2025\_CMAI == + 18356.0
  + 167NCMAI\_2030
    - 167N\_2030\_CMAI == + 22945.0
  + 167NCMAI\_2050
    - 167N\_2050\_CMAI == + 91780.0
* 167S CMAI by year (total 167N ac divided by 30 years = 4,069 acres cut per year)
  + 167SCMAI\_2021
    - 167S\_2021\_CMAI == + 4069.0
  + 167SCMAI\_2025
    - 167S\_2025\_CMAI == + 16276.0
  + 167SCMAI\_2030
    - 167S\_2030\_CMAI == + 20345.0
  + 167SCMAI\_2050
    - 167S\_2050\_CMAI == + 81380.0

**RESULTS:** We are still getting an ERROR!! I’m gonna give it one more go and see if removing the CMAI by year for each forest type for the year 2050 helps, because we didn’t include 2050 in the CMAI Cut…

**CMAIRun6**

I removed 505CMAI\_2050, 167NCMAI\_2050, and 167SCMAI\_2050 from the .csv file before running it.

**RESULTS:** It’s still broken.

**CMAIRun7 (090822\_Edits)**

* Total Acreage (Where 1,318,480 = total mini model acres x 4 periods)
  + 167N\_2021\_CMAI + 167N\_2021\_NMGT + 167N\_2025\_CMAI + 167N\_2025\_NMGT + 167N\_2030\_CMAI + 167N\_2030\_NMGT + 167N\_2050\_CMAI + 167N\_2050\_NMGT + 167S\_2021\_CMAI + 167S\_2021\_NMGT + 167S\_2025\_CMAI + 167S\_2025\_NMGT + 167S\_2030\_CMAI + 167S\_2030\_NMGT + 167S\_2050\_CMAI + 167S\_2050\_NMGT + 505\_2021\_CMAI + 505\_2021\_NMGT + 505\_2025\_CMAI + 505\_2025\_NMGT + 505\_2030\_CMAI + 505\_2030\_NMGT + 505\_2050\_CMAI + 505\_2050\_NMGT + 608\_2021\_NMGT + 608\_2025\_NMGT + 608\_2030\_NMGT + 608\_2050\_NMGT + 999\_2021\_NMGT + 999\_2025\_NMGT + 999\_2030\_NMGT + 999\_2050\_NMGT == + 1,318,480
* Yearly Acreages
  + YearlyAcreage\_2021
    - 167N\_2021\_CMAI + 167N\_2021\_NMGT + 167S\_2021\_CMAI + 167S\_2021\_NMGT + 505\_2021\_CMAI + 505\_2021\_NMGT + 608\_2021\_NMGT + 999\_2021\_NMGT == + 329,620
  + YearlyAcreage\_2025
    - 167N\_2025\_CMAI + 167N\_2025\_NMGT + 167S\_2025\_CMAI + 167S\_2025\_NMGT + 505\_2025\_CMAI + 505\_2025\_NMGT + 608\_2025\_NMGT + 999\_2025\_NMGT == + 329,620
  + YearlyAcreage\_2030
    - 167N\_2030\_CMAI + 167N\_2030\_NMGT + 167S\_2030\_CMAI + 167S\_2030\_NMGT + 505\_2030\_CMAI + 505\_2030\_NMGT + 608\_2030\_NMGT + 999\_2030\_NMGT == + 329,620
  + YearlyAcreage\_2050
    - 167N\_2050\_CMAI + 167N\_2050\_NMGT + 167S\_2050\_CMAI + 167S\_2050\_NMGT + 505\_2050\_CMAI + 505\_2050\_NMGT + 608\_2050\_NMGT + 999\_2050\_NMGT == + 329,620
* 505 Acreage by Year (Where 25,994 acres = 5,197 state-owned acres + 20,797 stewardship acres; difference 19,479)
  + 505Acreage\_2021
    - 505\_2021\_CMAI + 505\_2021\_NMGT == + 25,994
  + 505Acreage\_2025
    - 505\_2025\_CMAI + 505\_2025\_NMGT == + 25,994
  + 505Acreage\_2030
    - 505\_2030\_CMAI + 505\_2030\_NMGT == + 25,994
  + 505Acreage\_2050
    - 505\_2050\_CMAI + 505\_2050\_NMGT == + 25,994
* 167N Acreage by Year (Where 137,679 acres = 127,759 state-owned acres + 9,920 stewardship acres)
  + 167NAcreage\_2021
    - 167N\_2021\_CMAI + 167N\_2021\_NMGT == + 137679.0
  + 167NAcreage\_2025
    - 167N\_2025\_CMAI + 167N\_2025\_NMGT == + 137679.0
  + 167NAcreage\_2030
    - 167N\_2030\_CMAI + 167N\_2030\_NMGT == + 137679.0
  + 167NAcreage\_2050
    - 167N\_2050\_CMAI + 167N\_2050\_NMGT == + 137679.0
* 167S Acreage by Year (Where 122,092 acres = 113,295 state-owned acres + 8,797 stewardship acres)
  + 167SAcreage\_2021
    - 167S\_2021\_CMAI + 167S\_2021\_NMGT == + 122092.0
  + 167SAcreage\_2025
    - 167S\_2025\_CMAI + 167S\_2025\_NMGT == + 122092.0
  + 167SAcreage\_2030
    - 167S\_2030\_CMAI + 167S\_2030\_NMGT == + 122092.0
  + 167SAcreage\_2050
    - 167S\_2050\_CMAI + 167S\_2050\_NMGT == + 122092.0
* 608 Acreage by Year (Where 40,786 acres = 40,535 state-owned acres + 251 stewardship acres)
  + 608Acreage\_2021
    - 608\_2021\_NMGT == + 40786.0
  + 608Acreage\_2025
    - 608\_2025\_NMGT == + 40786.0
  + 608Acreage\_2030
    - 608\_2030\_NMGT == + 40786.0
  + 608Acreage\_2050
    - 608\_2050\_NMGT == + 40786.0
* 999 Acreage by Year (Where 3,069 acres = 2,440 state-owned acres + 629 stewardship acres)
  + 999Acreage\_2021
    - 999\_2021\_NMGT == + 3069.0
  + 999Acreage\_2025
    - 999\_2025\_NMGT == + 3069.0
  + 999Acreage\_2030
    - 999\_2030\_NMGT == + 3069.0
  + 999Acreage\_2050
    - 999\_2050\_NMGT == + 3069.0
* CMAI Cuts (Period cuts are based on dividing total acres of each forest type by 30 years, then adding them up for all CMAI managed FT; only cutting in 2021, 2015 & 2030; 505 = 866.47ac, 167N = 4,589.3ac, 167S = 4069.7ac for a total of 9,525.5ac cut each year)
  + CMAI\_Cut\_2021
    - 167N\_2021\_CMAI + 167S\_2021\_CMAI + 505\_2021\_CMAI >= + 9525.5
  + CMAI\_Cut\_2025
    - 167N\_2025\_CMAI + 167S\_2025\_CMAI + 505\_2025\_CMAI >= + 38,102
  + CMAI\_Cut\_2030
    - 167N\_2030\_CMAI + 167S\_2030\_CMAI + 505\_2030\_CMAI >= + 47,627.5

**CMAIRun8 (092622\_Edits)**

**\*\*realized that the 505 acreage edits that we made were incorrect. Private lands overall has 20,797acres of 505, BUT PL stewardship only has 1,318 acres of 505, making 505 have 6,515 acres of state and stewardship lands overall. This affects a lot of our math.**

* Total Acreage (Where 1,318,480 = total mini model acres x 4 periods)
  + 167N\_2021\_CMAI + 167N\_2021\_NMGT + 167N\_2025\_CMAI + 167N\_2025\_NMGT + 167N\_2030\_CMAI + 167N\_2030\_NMGT + 167N\_2050\_CMAI + 167N\_2050\_NMGT + 167S\_2021\_CMAI + 167S\_2021\_NMGT + 167S\_2025\_CMAI + 167S\_2025\_NMGT + 167S\_2030\_CMAI + 167S\_2030\_NMGT + 167S\_2050\_CMAI + 167S\_2050\_NMGT + 505\_2021\_CMAI + 505\_2021\_NMGT + 505\_2025\_CMAI + 505\_2025\_NMGT + 505\_2030\_CMAI + 505\_2030\_NMGT + 505\_2050\_CMAI + 505\_2050\_NMGT + 608\_2021\_NMGT + 608\_2025\_NMGT + 608\_2030\_NMGT + 608\_2050\_NMGT + 999\_2021\_NMGT + 999\_2025\_NMGT + 999\_2030\_NMGT + 999\_2050\_NMGT == + 1,240,564
* Yearly Acreages
  + YearlyAcreage\_2021
    - 167N\_2021\_CMAI + 167N\_2021\_NMGT + 167S\_2021\_CMAI + 167S\_2021\_NMGT + 505\_2021\_CMAI + 505\_2021\_NMGT + 608\_2021\_NMGT + 999\_2021\_NMGT == + 310141
  + YearlyAcreage\_2025
    - 167N\_2025\_CMAI + 167N\_2025\_NMGT + 167S\_2025\_CMAI + 167S\_2025\_NMGT + 505\_2025\_CMAI + 505\_2025\_NMGT + 608\_2025\_NMGT + 999\_2025\_NMGT == + 310,141
  + YearlyAcreage\_2030
    - 167N\_2030\_CMAI + 167N\_2030\_NMGT + 167S\_2030\_CMAI + 167S\_2030\_NMGT + 505\_2030\_CMAI + 505\_2030\_NMGT + 608\_2030\_NMGT + 999\_2030\_NMGT == + 310,141
  + YearlyAcreage\_2050
    - 167N\_2050\_CMAI + 167N\_2050\_NMGT + 167S\_2050\_CMAI + 167S\_2050\_NMGT + 505\_2050\_CMAI + 505\_2050\_NMGT + 608\_2050\_NMGT + 999\_2050\_NMGT == + 310,141
* 505 Acreage by Year (Where 6515 acres = 5,197 state-owned acres + 1,318 stewardship acres; difference 19,479)
  + 505Acreage\_2021
    - 505\_2021\_CMAI + 505\_2021\_NMGT == + 6515
  + 505Acreage\_2025
    - 505\_2025\_CMAI + 505\_2025\_NMGT == + 6515
  + 505Acreage\_2030
    - 505\_2030\_CMAI + 505\_2030\_NMGT == + 6515
  + 505Acreage\_2050
    - 505\_2050\_CMAI + 505\_2050\_NMGT == + 6515
* 167N Acreage by Year (Where 137,679 acres = 127,759 state-owned acres + 9,920 stewardship acres)
  + 167NAcreage\_2021
    - 167N\_2021\_CMAI + 167N\_2021\_NMGT == + 137679.0
  + 167NAcreage\_2025
    - 167N\_2025\_CMAI + 167N\_2025\_NMGT == + 137679.0
  + 167NAcreage\_2030
    - 167N\_2030\_CMAI + 167N\_2030\_NMGT == + 137679.0
  + 167NAcreage\_2050
    - 167N\_2050\_CMAI + 167N\_2050\_NMGT == + 137679.0
* 167S Acreage by Year (Where 122,092 acres = 113,295 state-owned acres + 8,797 stewardship acres)
  + 167SAcreage\_2021
    - 167S\_2021\_CMAI + 167S\_2021\_NMGT == + 122092.0
  + 167SAcreage\_2025
    - 167S\_2025\_CMAI + 167S\_2025\_NMGT == + 122092.0
  + 167SAcreage\_2030
    - 167S\_2030\_CMAI + 167S\_2030\_NMGT == + 122092.0
  + 167SAcreage\_2050
    - 167S\_2050\_CMAI + 167S\_2050\_NMGT == + 122092.0
* 608 Acreage by Year (Where 40,786 acres = 40,535 state-owned acres + 251 stewardship acres)
  + 608Acreage\_2021
    - 608\_2021\_NMGT == + 40786.0
  + 608Acreage\_2025
    - 608\_2025\_NMGT == + 40786.0
  + 608Acreage\_2030
    - 608\_2030\_NMGT == + 40786.0
  + 608Acreage\_2050
    - 608\_2050\_NMGT == + 40786.0
* 999 Acreage by Year (Where 3,069 acres = 2,440 state-owned acres + 629 stewardship acres)
  + 999Acreage\_2021
    - 999\_2021\_NMGT == + 3069.0
  + 999Acreage\_2025
    - 999\_2025\_NMGT == + 3069.0
  + 999Acreage\_2030
    - 999\_2030\_NMGT == + 3069.0
  + 999Acreage\_2050
    - 999\_2050\_NMGT == + 3069.0
* CMAI Cuts (Period cuts are based on dividing total acres of each forest type by 30 years, then adding them up for all CMAI managed FT; only cutting in 2021, 2015 & 2030; 505 = 217.2ac, 167N = 4,589.3ac, 167S = 4069.7ac for a total of 8,876.2ac cut each year)
  + CMAI\_Cut\_2021
    - 167N\_2021\_CMAI + 167S\_2021\_CMAI + 505\_2021\_CMAI >= + 8876.2
  + CMAI\_Cut\_2025
    - 167N\_2025\_CMAI + 167S\_2025\_CMAI + 505\_2025\_CMAI >= + 35504.8
  + CMAI\_Cut\_2030
    - 167N\_2030\_CMAI + 167S\_2030\_CMAI + 505\_2030\_CMAI >= + 44381