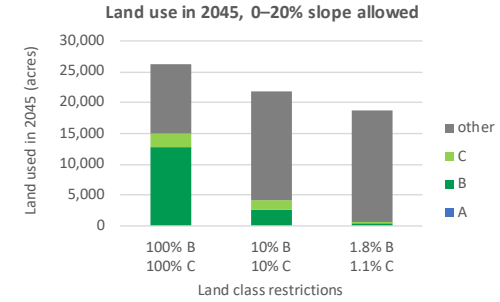
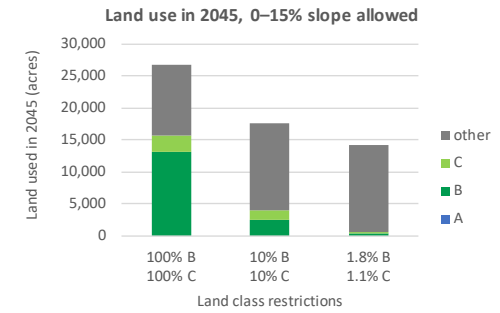


Land Use

| scenario code | land used (acres) |   |        |       |        | land budget (acres) |             |                  |                     |                  |       |
|---------------|-------------------|---|--------|-------|--------|---------------------|-------------|------------------|---------------------|------------------|-------|
|               | scenario          | A | B      | C     | other  | total area          | usable area | usable % (0-15%) | usable area (0-15%) | usable % (0-15%) |       |
| 100_100       | 100% B100% C      | 0 | 12,696 | 2,239 | 11,347 | A                   | 16,032      | 0                | 0.0%                | 0                | 0.0%  |
| 010_010       | 10% B10% C        | 0 | 2,586  | 1,497 | 17,792 | B                   | 25,862      | 17,076           | 66.0%               | 17,076           | 66.0% |
| 002_001       | 1.8% B1.1% C      | 0 | 466    | 165   | 18,102 | C                   | 14,968      | 6,113            | 40.8%               | 6,113            | 40.8% |
| 002_001_123   | no new wind       | 0 | 466    | 165   | 18,106 | other               | 326,641     | 18,108           | 5.5%                | 18,108           | 5.5%  |



| scenario code         | scenario     | A | B      | C     | other  |
|-----------------------|--------------|---|--------|-------|--------|
| 100_100_low_slope     | 100% B100% C | 0 | 13,218 | 2,419 | 11,180 |
| 010_010_low_slope     | 10% B10% C   | 0 | 2,586  | 1,497 | 13,589 |
| 002_001_low_slope     | 1.8% B1.1% C | 0 | 466    | 165   | 13,605 |
| 002_001_123_low_slope | no new wind  | 0 | 466    | 165   | 13,616 |



grep '.2045,' outputs\_\*/land\_class\_use.csv | pbcopy

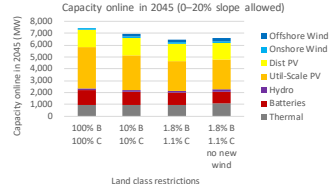
| load_zone                                 | land_class | period | total_area    | usable_area | allowed_area  | area_used  | frac_allow | frac_used | lookup key                  |
|-------------------------------------------|------------|--------|---------------|-------------|---------------|------------|------------|-----------|-----------------------------|
| outputs_002_001/land_class_use.csv:Oahu   | A          | 2045   | 64,878,800    | 0           | 0             | 0          | 0.0%       | 0.0%      | 002_001 A                   |
| outputs_002_001/land_class_use.csv:Oahu   | B          | 2045   | 104,658,000   | 69,105,700  | 1,883,840     | 1,883,840  | 1.8%       | 1.8%      | 002_001 B                   |
| outputs_002_001/land_class_use.csv:Oahu   | C          | 2045   | 60,571,400    | 24,737,700  | 666,286       | 666,286    | 1.1%       | 1.1%      | 002_001 C                   |
| outputs_002_001/land_class_use.csv:Oahu   | other      | 2045   | 1,321,870,000 | 73,279,300  | 1,321,870,000 | 73,254,500 | 100.0%     | 5.5%      | 002_001 other               |
| outputs_002_001_123/land_class_use.csv:Oa | A          | 2045   | 64,878,800    | 0           | 0             | 0          | 0.0%       | 0.0%      | 002_001_123 A               |
| outputs_002_001_123/land_class_use.csv:Oa | B          | 2045   | 104,658,000   | 69,105,700  | 1,883,840     | 1,883,840  | 1.8%       | 1.8%      | 002_001_123 B               |
| outputs_002_001_123/land_class_use.csv:Oa | C          | 2045   | 60,571,400    | 24,737,700  | 666,286       | 666,286    | 1.1%       | 1.1%      | 002_001_123 C               |
| outputs_002_001_123/land_class_use.csv:Oa | other      | 2045   | 1,321,870,000 | 73,279,300  | 1,321,870,000 | 73,272,800 | 100.0%     | 5.5%      | 002_001_123 other           |
| outputs_002_001_123_low_slope/land_class  | A          | 2045   | 64,878,800    | 0           | 0             | 0          | 0.0%       | 0.0%      | 002_001_123_low_slope A     |
| outputs_002_001_123_low_slope/land_class  | B          | 2045   | 104,658,000   | 65,335,300  | 1,883,840     | 1,883,840  | 1.8%       | 1.8%      | 002_001_123_low_slope B     |
| outputs_002_001_123_low_slope/land_class  | C          | 2045   | 60,571,400    | 20,783,400  | 666,286       | 666,286    | 1.1%       | 1.1%      | 002_001_123_low_slope C     |
| outputs_002_001_123_low_slope/land_class  | other      | 2045   | 1,321,870,000 | 55,102,100  | 1,321,870,000 | 55,102,100 | 100.0%     | 4.2%      | 002_001_123_low_slope other |
| outputs_002_001_low_slope/land_class      | A          | 2045   | 64,878,800    | 0           | 0             | 0          | 0.0%       | 0.0%      | 002_001_low_slope A         |
| outputs_002_001_low_slope/land_class      | B          | 2045   | 104,658,000   | 65,335,300  | 1,883,840     | 1,883,840  | 1.8%       | 1.8%      | 002_001_low_slope B         |
| outputs_002_001_low_slope/land_class      | C          | 2045   | 60,571,400    | 20,783,400  | 666,286       | 666,286    | 1.1%       | 1.1%      | 002_001_low_slope C         |
| outputs_002_001_low_slope/land_class      | other      | 2045   | 1,321,870,000 | 55,102,100  | 1,321,870,000 | 55,057,100 | 100.0%     | 4.2%      | 002_001_low_slope other     |
| outputs_010_010/land_class_use.csv:Oahu   | A          | 2045   | 64,878,800    | 0           | 0             | 0          | 0.0%       | 0.0%      | 010_010 A                   |
| outputs_010_010/land_class_use.csv:Oahu   | B          | 2045   | 104,658,000   | 69,105,700  | 10,465,800    | 10,465,800 | 10.0%      | 10.0%     | 010_010 B                   |
| outputs_010_010/land_class_use.csv:Oahu   | C          | 2045   | 60,571,400    | 24,737,700  | 6,057,140     | 6,057,140  | 10.0%      | 10.0%     | 010_010 C                   |
| outputs_010_010/land_class_use.csv:Oahu   | other      | 2045   | 1,321,870,000 | 73,279,300  | 1,321,870,000 | 72,000,500 | 100.0%     | 5.4%      | 010_010 other               |
| outputs_010_010_low_slope/land_class      | A          | 2045   | 64,878,800    | 0           | 0             | 0          | 0.0%       | 0.0%      | 010_010_low_slope A         |
| outputs_010_010_low_slope/land_class      | B          | 2045   | 104,658,000   | 65,335,300  | 10,465,800    | 10,465,800 | 10.0%      | 10.0%     | 010_010_low_slope B         |
| outputs_010_010_low_slope/land_class      | C          | 2045   | 60,571,400    | 20,783,400  | 6,057,140     | 6,057,140  | 10.0%      | 10.0%     | 010_010_low_slope C         |
| outputs_010_010_low_slope/land_class      | other      | 2045   | 1,321,870,000 | 55,102,100  | 1,321,870,000 | 54,992,500 | 100.0%     | 4.2%      | 010_010_low_slope other     |
| outputs_100_100/land_class_use.csv:Oahu   | A          | 2045   | 64,878,800    | 0           | 0             | 0          | 0.0%       | 0.0%      | 100_100 A                   |
| outputs_100_100/land_class_use.csv:Oahu   | B          | 2045   | 104,658,000   | 69,105,700  | 104,658,000   | 51,378,400 | 100.0%     | 49.1%     | 100_100 B                   |
| outputs_100_100/land_class_use.csv:Oahu   | C          | 2045   | 60,571,400    | 24,737,700  | 60,571,400    | 9,062,450  | 100.0%     | 15.0%     | 100_100 C                   |
| outputs_100_100/land_class_use.csv:Oahu   | other      | 2045   | 1,321,870,000 | 73,279,300  | 1,321,870,000 | 45,921,700 | 100.0%     | 3.5%      | 100_100 other               |
| outputs_100_100_low_slope/land_class      | A          | 2045   | 64,878,800    | 0           | 0             | 0          | 0.0%       | 0.0%      | 100_100_low_slope A         |
| outputs_100_100_low_slope/land_class      | B          | 2045   | 104,658,000   | 65,335,300  | 104,658,000   | 53,492,700 | 100.0%     | 51.1%     | 100_100_low_slope B         |
| outputs_100_100_low_slope/land_class      | C          | 2045   | 60,571,400    | 20,783,400  | 60,571,400    | 9,788,980  | 100.0%     | 16.2%     | 100_100_low_slope C         |
| outputs_100_100_low_slope/land_class      | other      | 2045   | 1,321,870,000 | 55,102,100  | 1,321,870,000 | 45,243,900 | 100.0%     | 3.4%      | 100_100_low_slope other     |



Capacity online in 2045

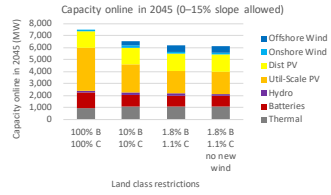
0-20% slope

|                    | Thermal | Batteries | Hydro | Util-Scale PV | Dist PV | Onshore Wir | Offshore Wir | Battery MW | Uncategorized |
|--------------------|---------|-----------|-------|---------------|---------|-------------|--------------|------------|---------------|
| 100% B100% C       | 973     | 1,235     | 150   | 3,504         | 1,432   | 150         | 0            | 9,009      | 0             |
| 10% B10% C         | 973     | 1,125     | 150   | 2,917         | 1,432   | 150         | 201          | 7,518      | 0             |
| 1.8% B1.1% C       | 973     | 1,035     | 150   | 2,498         | 1,432   | 150         | 237          | 6,824      | 0             |
| 1.8% B1.1% C no ne | 1,124   | 983       | 150   | 2,498         | 1,432   | 123         | 299          | 6,816      | 0             |



0-15% slope

|                    | Thermal | Batteries | Hydro | Util-Scale PV | Dist PV | Onshore Wir | Offshore Wir | Battery MW | Uncategorized |
|--------------------|---------|-----------|-------|---------------|---------|-------------|--------------|------------|---------------|
| 100% B100% C       | 973     | 1,262     | 150   | 3,576         | 1,432   | 150         | 0            | 9,103      | 0             |
| 10% B10% C         | 1,124   | 966       | 150   | 2,356         | 1,432   | 150         | 400          | 6,070      | 0             |
| 1.8% B1.1% C       | 1,124   | 897       | 150   | 1,898         | 1,432   | 150         | 549          | 4,689      | 0             |
| 1.8% B1.1% C no ne | 1,124   | 849       | 150   | 1,899         | 1,432   | 123         | 573          | 4,561      | 0             |



(grep load\_zone outputs\*/capacity\_by\_technology\_100\_100.csv && grep 'Oahu,2045,' outputs\_???\_???(1\_123)/capacity\_by\_technology\*.csv | sort -r) | pbcopy

| load_zone        | period | AES | Airport_DSG | Battery_Bulk | Battery_Bulk | Battery_Cont | Battery_Cont | Battery_Reg | Battery_Reg | CC_152 | CIP_CT | CentralTrack | DistBattery | FlatDistPV | H-Power | Hawaii_Coge | IC_Barge | IC_MCBH | IC_Schofield | Kahe_1 | Kahe_2 | Kahe_3 | Kahe_4 | Kahe_5 | Kahe_6 | Kalaeloa_CCI | Kalaeloa_CC | Kalaeloa_CCI | OffshoreWin | OnshoreWin | SlopedDistPV | Tesoro_Hawi | Waiiau_10 | Waiiau_10 | Waiiau_3 | Waiiau_4 | Waiiau_4 | Waiiau_5 | Waiiau_6 | Waiiau_7 | Waiiau_8 | Waiiau_9 | hydro | fuel cells |
|------------------|--------|-----|-------------|--------------|--------------|--------------|--------------|-------------|-------------|--------|--------|--------------|-------------|------------|---------|-------------|----------|---------|--------------|--------|--------|--------|--------|--------|--------|--------------|-------------|--------------|-------------|------------|--------------|-------------|-----------|-----------|----------|----------|----------|----------|----------|----------|----------|----------|-------|------------|
| outputs_100_100/ | 2045   | -   | 8           | 985          | 8,008        | -            | -            | -           | -           | 151    | 113    | 3,504        | 250         | 1,001      | 1,158   | 73          | -        | -       | 49           | -      | -      | -      | -      | 134    | 134    | 90           | 90          | 28           | -           | 150        | 275          | -           | 50        | -         | -        | -        | -        | -        | -        | -        | 53       | 150      | -     |            |
| outputs_010_010/ | 2045   | -   | 8           | 875          | 6,517        | -            | -            | -           | -           | 151    | 113    | 2,917        | 250         | 1,001      | 1,319   | 73          | -        | -       | 49           | -      | -      | -      | -      | 134    | 134    | 90           | 90          | 28           | 201         | 150        | 114          | -           | 50        | -         | -        | -        | -        | -        | -        | -        | 53       | 150      | -     |            |
| outputs_002_001/ | 2045   | -   | 8           | 784          | 5,823        | -            | -            | -           | -           | 151    | 113    | 2,498        | 250         | 1,001      | 1,102   | 73          | -        | -       | 49           | -      | -      | -      | -      | 134    | 134    | 90           | 90          | 28           | 237         | 150        | 331          | -           | 50        | -         | -        | -        | -        | -        | -        | -        | 53       | 150      | -     |            |
| outputs_002_001_ | 2045   | -   | 8           | 733          | 5,815        | -            | -            | -           | -           | 301    | 113    | 2,498        | 250         | 1,001      | 1,107   | 73          | -        | -       | 49           | -      | -      | -      | -      | 134    | 134    | 90           | 90          | 28           | 299         | 123        | 326          | -           | 50        | -         | -        | -        | -        | -        | -        | -        | 53       | 150      | -     |            |

(grep load\_zone outputs\*/capacity\_by\_technology\_100\_100.csv && grep 'Oahu,2045,' outputs\_???\_???(1\_123)\_low\_slope/capacity\_by\_technology\*.csv | sort -r) | pbcopy

| load_zone        | period | AES | Airport_DSG | Battery_Bulk | Battery_Bulk | Battery_Cont | Battery_Cont | Battery_Reg | Battery_Reg | CC_152 | CIP_CT | CentralTrack | DistBattery | FlatDistPV | H-Power | Hawaii_Coge | IC_Barge | IC_MCBH | IC_Schofield | Kahe_1 | Kahe_2 | Kahe_3 | Kahe_4 | Kahe_5 | Kahe_6 | Kalaeloa_CCI | Kalaeloa_CC | Kalaeloa_CCI | OffshoreWin | OnshoreWin | SlopedDistPV | Tesoro_Hawi | Waiiau_10 | Waiiau_10 | Waiiau_3 | Waiiau_4 | Waiiau_4 | Waiiau_5 | Waiiau_6 | Waiiau_7 | Waiiau_8 | Waiiau_9 | hydro | fuel cells |
|------------------|--------|-----|-------------|--------------|--------------|--------------|--------------|-------------|-------------|--------|--------|--------------|-------------|------------|---------|-------------|----------|---------|--------------|--------|--------|--------|--------|--------|--------|--------------|-------------|--------------|-------------|------------|--------------|-------------|-----------|-----------|----------|----------|----------|----------|----------|----------|----------|----------|-------|------------|
| outputs_100_100/ | 2045   | -   | 8           | 1,012        | 8,102        | -            | -            | -           | -           | 151    | 113    | 3,576        | 250         | 1,001      | 1,226   | 73          | -        | -       | 49           | -      | -      | -      | -      | 134    | 134    | 90           | 90          | 28           | -           | 150        | 206          | -           | 50        | -         | -        | -        | -        | -        | -        | -        | -        | 53       | 150   | -          |
| outputs_010_010/ | 2045   | -   | 8           | 715          | 5,069        | -            | -            | -           | -           | 301    | 113    | 2,356        | 250         | 1,001      | 1,236   | 73          | -        | -       | 49           | -      | -      | -      | -      | 134    | 134    | 90           | 90          | 28           | 400         | 150        | 196          | -           | 50        | -         | -        | -        | -        | -        | -        | -        | -        | 53       | 150   | -          |
| outputs_002_001/ | 2045   | -   | 8           | 647          | 3,688        | -            | -            | -           | -           | 301    | 113    | 1,898        | 250         | 1,001      | 1,103   | 73          | -        | -       | 49           | -      | -      | -      | -      | 134    | 134    | 90           | 90          | 28           | 549         | 150        | 330          | -           | 50        | -         | -        | -        | -        | -        | -        | -        | -        | 53       | 150   | -          |
| outputs_002_001_ | 2045   | -   | 8           | 599          | 3,560        | -            | -            | -           | -           | 301    | 113    | 1,899        | 250         | 1,001      | 1,245   | 73          | -        | -       | 49           | -      | -      | -      | -      | 134    | 134    | 90           | 90          | 28           | 573         | 123        | 187          | -           | 50        | -         | -        | -        | -        | -        | -        | -        | -        | 53       | 150   | -          |