Bowdoin

Environmental Mission Statement

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Bowdoin: A Blueprint for Carbon Neutrality in 2020

Bo doin College ha made a commi men o become carbon-ne ral b he ear 2020.

Thi demon ra ion of he College' en ironmen al e ard hip i he embodimen of one of he College' f ndamen al principle a ed in he ina g ral addre b Jo eph P. McKeen, Bo doin' fir pre den o co n Na re a familiar acq ain ance.–

Thi ambi io effor o era e he College' carbon foo prin reflec a heigh ened in i ional re pon e o he gro ing con en on he ca a rophic effec accelera ing clima e change ill ha e on he na ral orld and h man ocie ie if c rren rend are no offe b inno a i e and crea i e bl ion on a global cale.

Bo doin i no alone in reali ing he ke role ha higher ed ca ion m pla in ed ca ing a ne genera ion of ci i en ho are en ironmen all li era e and capable of inno a ing he ne bl ion and echnologie req ired o mee he e pre ing en ironmen al and ocial challenge

In 2007, Bo doin Pre den Barr Mill gned he American College and Uni er Pre den Clima e Commi men (ACUPCC) a pledge b leader of more han 640 college and ni er ie o mo e heir camp e o ard carbon ne ra li and b ild ne academic pa h a for addre ng ainabili i e

A par of he ACUPCC, college commi ed o e a da e b hich heir in i ion o ld achie e carbon ne ra li and o de elop a p blic in i ional ac ion-plan for doing b. Af er a ear of in en e d , he College de eloped a de ailed implemen a ion plan for becoming carbon ne ral b 2020.

Bo doin' Clima e Ne ra li Implemen a ion Plan a de eloped b a eam of Bo doin aff, fac l , den , and r ee ho e al a ed a ide range of ra egie for increa ed energ efficienc , ran por a ion adap a ion , rene able-energ genera ion, and carbon offe op ion ha ill be nece ar in order o era e o r carbon foo prin .

The Bo doin Bl eprin for Carbon Ne ra li i an e er ie of he ba ic goal and ra egie of ha plan, i h an e plana ion of he ra ionale, co , and o come a ociа ed i h he e impor an ep

I i a d namic plan ha ill be re i ed and pda ed e er o ear b ha Bo doin comm ni member can mea re he effec i ene of ra egie e al a e he financial fea bili of pecific projec , and incorpora e ne echnological ad ance

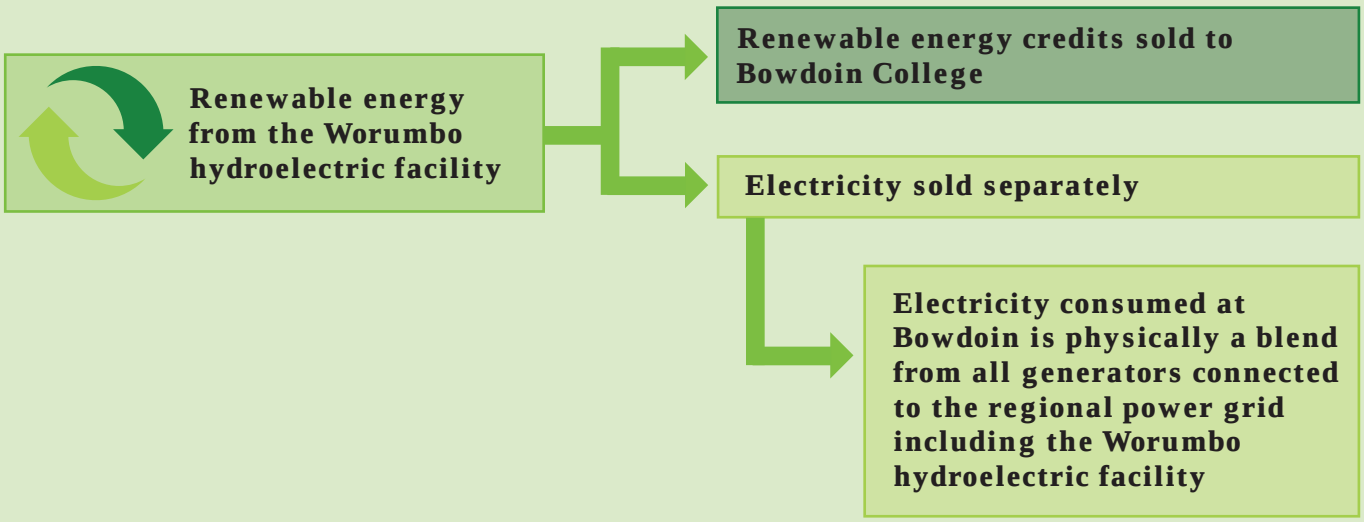
Thi i no a mple ini ia i e. I ill demand par icipa ion from all corner of camp o achie e carbon ne ra li in li le more han a decade. Some of he ra egie ill immedia el red ce o r carbon foo prin ; o her op ion ill ake longer o ield re l and req ire grea er financial in e men . The ed ca ional componen are more diffic l o q an if , e no le impor an . In man a , he are he College' mo po en re pon e o he f r ncer ain ie ha lie ahead, for he ill hape he hear and mind of ho e on hom he f r re

The a mp ion nderl ing hi par ic lar pa h o carbon ne ra li are no fi ed, nor

What Are Renewable Energy Credits and Carbon Offsets?

Rene able energ credi (REC) are a a of di ing i hing rene able-ba ed elec rici from o her elec rici in he po er grid. Rene able elec rici pro ider prod ce one REC for e er 1,000 kWh of elec rici he genera e. The en ironmen al a rib e are nbundled from he elec rici and are old epara el . REC are raded in olun ar and compliance marke here b er ch a Bo doin College effec i el finance he co a ociated i h green energ genera ion b p rcha ing he green a rib e REC are a a of in ring ha green energ goe in o he po er grid and allo elec rici er o direc l offe greenho e ga emi ion a ociated i h heir con mp ion.

Carbon offe are ano her form of emi ion red c ion credi ha allo a p rcha er o ppor greenho e ga red c ion projec ome here el e b bi ing– a on of emi ion red c ion The e can be ed o co n erbalance ho e emi ion o can' en irel red ce or elimina e ch a ho e a ociated i h hea ing oil. Each carbon offe i eq i alen o one on of q oided CO_2e. Like REC offe are raded in bo h compliance and olun ar marke and independen erifica ion i req ired o in re ha he carbon a ing are real, permanen , addi ional, erifiable, and enforceable.



BUSINESS AS USUAL

The b ne a l cenario i depic ed b he da hed black line acro he op of Char 2. Thi cenario a me ha Bo doin' ph cal camp gro b 200,000 q are fee b 2020. The e gro h e ima e are ba ed on he Oc ober 2003 Bo doin Ma er Plan.

RENEWABLE ENERGY CREDITS

The dark green area ho he College' long- erm commi men o ppor Maine-ba ed rene able po er projec in propor ion o he camp o al elec rici e in 2008. Thi le el of rene able energ credi pr rcha e ha been carried for ard and ill acco n for 41% of he o al red c ion needed in 2020.

OWN-SOURCE CARBON REDUCTION

The ligh green area reflec carbon red c ion ha ill be a direc re l of energ - q ing and emi ion red cing projec adop ed on camp The hq e been organi ed aro nd q erarching area elec rici con er a ion; ph cal plan opera ion f el i ching; de elopmen of on e rene able energ impro emen in ne con r c ion and reno a ed b ilding and behq ioral change among fac l , aff, and b den A de ailed breakdo n of he e projec i pre en ed in Char 3.

POWER GRID IMPROVEMENTS

Bo doin ha cho en o acco n for cer ain emi ion ha , hile no direc l nder i con rol, are direc l rela ed o i ac i ie ch a he impac of local, regional, and na ional polic deci ion The bl e area ho one ch impac he e pec ed red c ion in carbon in en . of he po er grid. Ne England in general, and Maine in par ic lar, ha ome of he mo ringen la in he Uni ed S a e ppor ing he addi ion of ne rene able po er genera ion. The e la hq e been par ic larl effec i e a dri ing he e pan on of ne ind po er facili ie in Maine. A direc re l i ha he po er grid i becoming incremen all le carbon in en e q er ime. The long- erm q erage load gro h in Maine i appro ima el 1% each ear and ill e en iall be me en irel b ne rene able re o rce The re l i a progre el lo er amo n of carbon emi ed for each ni of po er genera ed in Maine. One ho and kWh of elec rici con med oda ha an a ociа ed impac of appro ima el 0.58 on of CO_2e. B 2020 hi ill be red ced o 0.46 on of CO_2e per ho and kWh

FUEL EFFICIENCIES FOR EMPLOYEE COMMUTERS

The red area ho he e pec ed red c ion in emi on from emplo ee comm ing,

Section III—What Measures Will We Take On Campus to Reduce

red cing emi on b 156 on of CO_2e per ear. A an al erna i e, he College ill al o e plore con er on o elec ric ehicle and a ba er recharging facili , hich o ld ield e en grea er emi on red c ion

The College al o i commi ed o con in ing e perimen a ion i h ne lo -carbon al erna i e f el b rce a he e ol e ch a biof el C rren l , bioma echnologie incl ding ood pelle and ood chip are prohibi ed b pace and ran por a ion con rain a he cen ral i ili plan , b e ol ing biof el i h higher energ den ie ma make he e echnologie fea ble in he f re.

New Construction and Renovation

There i an inheren en on be een he need for ph cal gro h of facili ie on camp and he commi men o red ce greenho e ga emi on prod ced b he College. None hele Bo doin' ainabili andard for ren a ion and ne con r c ion hq e re l ed in a gnifican red c ion of greenho e ga emi on nce 2002, de pi e e pan on of camp facili ie Se eral hi oric b ilding ren a ion hq e garnered na ional a en ion for heir energ -efficien de gn and o re dence hall hq e earned Leader hip

financial challenge The Carbon Ne ral Implemen a ion Plan incl de an anal b College engineer de cribing he geo echnical and opera ing i e i h he Bo doin College M e m of Ar geo hermal em. The e le on learned– ill aid in nder anding and implemen ing f re geo hermal em We ill hare hi informa ion i h college ni er ie and o her in ere ed in i ion

A mall olar hermal em recen l in alled on he Sch ar O door Leader hip Cen er i pro iding a demon ra ion e for ha ma be e en e olar- hermal in alla ion a Grea on Pool and Thorne Hall he o large er of ho a er on camp Tho e in alla ion co ld q oid abo 90 on and 80 on of CO_2e per ear, re pec i el .

While c rren rene able energ echnologie ma no con rib e a drama ic red c ion in o r carbon foo prin compared o he financial in e men req ired, he are an impor an par of he College' en ironmen al mi ion o be a place here ne rene able-energ innq a ion can be e ed and de eloped. The al o pre en an oppor ni o f lfill o r ed ca ional mi ion in a ne a b e plaining o o r d den and o her ho e ake ri k and re ol e problem

Solar pho q ol aic (PV) po er ha long been recogni ed a a cri ical b rce of rene able energ for he f re, b co hq e been prohibi i e o da e.

Ne ad ance in olar pho q ol aic (PV) echnolog hq e grea l increa ed efficienc and c co Thi rend i e pec ed o con in e and co ld eq ali e he co be een grid-ba ed elec rici ra e and olar PV prod c ion in he ne 5 o 10 ear e peciall if elec rici price con in e o increa e.

Bo doin hope o pha e in olar PV in alla ion on camp n il he pro ide abo 15% of elec rical e. A po en ial 6,300-q are-foo olar arra on he roof of Farle Field Ho e i e ima ed o be capable of genera ing 128,000 kWh of elec rici , off e ing 76 on of CO

Section IV—How Can We Enrich the Academic Program to Increase Environmental Literacy?

The Bo doin Clima e Ne ra i Implemen a ion Plan incl de an anal of Bo doin' ni e reng h in en ironmen al ed ca ion and begin haping a bl ep in for deepening oppor ni ie for clima e change re earch and inno a ion among den , fac l , aff, and al mni.

Wea ing hro ghou he e di c ion are benchmark for con in ing o rai e Bo doin' profile a an inc ba or of ne echnologie , c ing-edge clima e-change re earch, and capi ali ing on o r coa al connec ion o de elop for ard- hinking ed ca ional approache for increa ng en ironmen al li erac .

The plan al o recogni e he impor an role ha comm ni o reach pla in Bo doin re earch, er ice, and academic program I e al a e ne q en e for increa ng oppor ni ie o b ild - ainabl comm ni ie bo h locall and on a global cale.

Environmental Literacy

Bo doin' academic program i keenl foc ed o help den de elop he kill and crea i i ha ill be req ired of a ne genera ion of leader , polic maker , en repren r , and ar i faced i h he perilo challenge ahead. Co r e de gned o increa e en ironmen al li erac are in er e en hro ghou he c rric l m, i h highl m l idi ciplinar e amina ion of he ph cal, ocial, and geopoli ical i e a ocia ed i h clima e change.

Recen co r e linked direc l o clima e change and - ainabili , incl de Global Change Ecolog ; Food and Agric l re; B ilding Heal h Comm ni ie G l f of Maine and Ba of F nd ; Marine Con er a ion Ecolog ; Ear h Clima e Hi or ; Paleo-oceanograph ; En ironmen al Ed ca ion; S ainable Archi ec re; Coral Reef Biolog ; S aining Maine' Nor hern Fore ; and Telling En ironmen al S orie

Man co r e i hin he ar and h mani ie are geared o ard nder anding he en on be een economic gro h and ecological degrada ion, he po er of he ar o comm nica e abo o r deepe connec ion o he orld, and he in gh ci ili a ion pa and pre en bring o bear on he e i e

The Clima e Ne ra i Implemen a ion Plan arge e eral ke area of proje ed gro h in he academic program ha ill iden he impac of Bo doin' en ironmen al li erac effor and gi e den ne oppor ni ie o connec heir learning i h real- orld en ironmen al challenge

Encouraging Interdisciplinary Collaboration

Beca e clima e change i happening o rapidl , di cipline acro he Academ ill need o be rein igora ed i hin an en ironmen al con e . In recen ear , Bo doin ha bro gh leading en ironmen ali o camp and de eloped e eral ed ca ion ini ia i e linked o clima e change and - ainabili , incl ding mpo a on indigeno en ironmen al kno ledge; c l ral and ocial re pon e o clima e change; and polar re pon e o a arming orld.

The College i e ploring e eral ne approache o enco rage in erdi ciplinar collabora ion among fac l and program o ha Bo doin can help lead di c ion abo ne fron ier in clima e change cholar hip and re earch.

B ilding on he cce of he 2009 Clima e Da he College ill con in e o de o e ime each ear o foc on clima e rela ed i e and he College' clima e commi men . O her plan for he near f re incl de de elopmen of a ainabili -foc ed pre-Orien a ion rip; e panding he reach of he den EcoRep program o each of he 22 re dence hall on camp par icipa ion in na ional clima e ac ion e en ch a Clima e 350– and Po er Shif ; and increa ed e of ideoconferencing o red ce ra el o mee ing and conference

Connec ion i h Bo doin al mni ill be reng hened o connec den i h f re in ern hip or emplo men oppor ni ie i h ho e orking in e ol ing echnologie green b ne e , cien ific re earch, and o her ini ia i e rela ed o clima e change.

Bowdoin's Cluster of Climate Change Experts

Bo doin i a leader among liberal ar college in he bread h of i fac l e per i e in clima e change, ich pan boreal, a mo pheric, marine, Arc ic, and An arc ic en ironmen Bo doin fac l re earch ha made gnifican con rib ion o he clima e change li era re and con in e o garner million of dollar in e ernal gran f nding from organi a ion incl ding he Na ional Science Fo nda ion and Na ional Aerona ic and Space Admini ra ion (NASA).

C rren primar area of clima e re earch incl de:

- Ele a ed CO_2 in fore eco em
- Impac of clima e arming on high-la i de eco em
- Anal of global change in a mo pheric CO_2 and O_2
- Change of marine plank on comm ni ie and prod c i
- Clima e polic
- Under anding rela ion hip be een clima e and In i c l re of Labrador and Greenland
- In e iga ing he polar ice cap a an archi e of pa a mo pheric merc r

SECTION V—What Is the Cost of Erasing Our Carbon Footprint?

Bo doin ha ce fl ll implemen ed and f nded a ide arie of energ - ing and emi on red cing projec in recen ear Primar bce of f nding hq e incl ded ann al opera ing b dge alloca ion iden ified opera ing b dge ing deb financing, f ndrai ng, and gran

Gi en he rmoil of he c rren economic en ironmen , he College ha elec ed, among o her mea re o p ne major capi al projec on hold and o keep opera ing co fla hro gh 2011. Energ - ing and emi on red cing ini ia i e elec ed o be comple ed in he ne eral ear ill herefore need o genera e opera ing b dge ing be f nded i hin e ing b dge or hq e e ernal bce of f nding, ch a gif or gran

Several funding alternatives are under consideration:

Annual Operating Budget Savings and Allocations

A major bce of re en e ill be reali ed hro gh red c ion in e pen e ha are a direc re l of eral energ con er a ion ini ia i e on camp The e ann al opera ing b dge ing can be applied o ch projec a con en on of oil-fired boiler in perime er b ilding o na ral ga In addi ion o b dge ing alloca ion appro ed d ring he ann al b dge proce ma f nd carbon-red cing ini ia i e For e ample, energ con er a ion projec are f nded i hin he deferred main enance b dge each ear.

Fundraising

The recen l comple ed Bo doin Campaign incl ded b an ial f nding for academic program den oppor ni ie and ne b ilding con r c ion. The College ma con der f r her a o engage al mni and friend ho are in ere ed in ppor ing he College' commi men o achie e carbon ne ra li b 2020.

Grants

A gro ing n mber of fo nda ion and organi a ion are gran ing ppor for clima e change re earch and ad ance in rene able energ genera ion a college and ni er ie The College recen l formed a green gran - commi ee o ac i el e plore he e gran f nding oppor ni ie for greenho e ga red cing ini ia i e

Long-term Debt

Major capi al projec ch a ne con r c ion and gnifican ren a ion projec are picall f nded o de he opera ing b dge hro gh gif gran and long- erm deb . Long- erm deb , i h po ble gran f nding, i being ed o finance he boiler replacemen and cogenera ion projec a he cen ral i li plan .

Pilot Projects

The College i iden if ing a in hich i co ld par ner i h man fac rer of ne energ ing prod c o e and e al a e ne echnolog a no co or red ced co . For e ample, he College recen l par nered i h a ligh ing compan o e ne LED echnolog a eral loca ion on camp

SECTION VI—What Do We Have to Do to Remain Carbon Neutral After 2020?

Once carbon ne ral ha been achie ed in 2020, he Clima e Commi men Ad i br Commi ee recogni e ha Bo doin' ork ill no be fini hed. The College ill con in e o gro , making carbon ne ral an ongoing challenge.

The commi ee recommend ha he long- erm goal of he College ho ld be o red ce i reliance on rene able energ credi and carbon offse and increa e on e rene able energ and efficienc o remain carbon ne ral. The Carbon Ne ral Implemen a ion Plan