

111TH CONGRESS  
1ST SESSION

# S. 1713

To establish loan guarantee programs to develop biochar technology using excess plant biomass, to establish biochar demonstration projects on public land, and for other purposes.

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## IN THE SENATE OF THE UNITED STATES

SEPTEMBER 24, 2009

Mr. REID (for himself, Mr. BAUCUS, Mr. HATCH, Mr. TESTER, and Mr. UDALL of New Mexico) introduced the following bill; which was read twice and referred to the Committee on Energy and Natural Resources

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## A BILL

To establish loan guarantee programs to develop biochar technology using excess plant biomass, to establish biochar demonstration projects on public land, and for other purposes.

1 *Be it enacted by the Senate and House of Representa-*  
2 *tives of the United States of America in Congress assembled,*

3 **SECTION 1. SHORT TITLE.**

4 This Act may be cited as the “Water Efficiency via  
5 Carbon Harvesting and Restoration (WECHAR) Act of  
6 2009”.

7 **SEC. 2. FINDINGS AND PURPOSE.**

8 (a) FINDINGS.—Congress finds that—

1           (1) numerous expert reports have brought at-  
2           tention to the negative impacts caused by invasive  
3           weed species, including the consumption of water in  
4           areas with diminishing supplies;

5           (2) salt cedar, or Tamarix species, a noxious  
6           and invasive plant commonly found on public land  
7           can consume 200 gallons of water per plant each  
8           day;

9           (3) salt cedar now covers as much as 1,000,000  
10          acres of floodplains, riparian acres, wetland, and  
11          lake margins in the Western United States;

12          (4) minimizing the impact of and eradicating  
13          invasive species that wrest water from delicate wa-  
14          tersheds is in the best interest of the United States;

15          (5) as drought conditions worsen and legal re-  
16          quirements relating to water supply accelerate water  
17          shortages, innovative approaches are needed to ad-  
18          dress the increasing demand for water;

19          (6) pine bark beetle has killed thousands of  
20          acres of standing forests in the Western United  
21          States, creating a hazardous buildup of dead tree  
22          biomass that is a serious fire threat to those and  
23          surrounding areas;

24          (7) biochar technology would result in a more  
25          cost-effective, environmentally beneficial, and suc-

1        successful approach to combating invasive weeds and  
2        removing excess biomass and plant waste from pub-  
3        lic land;

4            (8) invasive weeds and excess biomass on public  
5        land can serve as feedstock for biochar and alter-  
6        native fuel production;

7            (9) it is in the best interest of the United  
8        States to conduct a comprehensive and thorough re-  
9        search, development, and demonstration program on  
10       biochar and related bioenergy so as to better under-  
11       stand how to use excess biomass available on public  
12       land; and

13           (10) biochar production and use systems have  
14       been shown to have many ancillary beneficial envi-  
15       ronmental impacts.

16        (b) PURPOSES.—The purposes of this Act are—

17            (1) to restore the natural hydrology of Western  
18        landscapes by removing water-intensive invasive  
19        plant species;

20            (2) to reduce dangerous forest and rangeland  
21        fuel loads;

22            (3) to develop technologies to convert undesir-  
23        able invasive plant species to useful materials;

24            (4) to develop markets for those materials; and

1           (5) to provide technologies to land managers to  
2           continue those processes into the future.

3 **SEC. 3. DEFINITIONS.**

4           In this Act:

5           (1) **BIOCHAR.**—The term “biochar” means  
6           charcoal or black carbon derived from organic mat-  
7           ter through pyrolysis.

8           (2) **BIOENERGY.**—The term “bioenergy” means  
9           hydrocarbons derived from organic matter through  
10          pyrolysis, including bio-oil, syngas, or thermal en-  
11          ergy.

12          (3) **EXCESS BIOMASS.**—

13           (A) **IN GENERAL.**—The term “excess bio-  
14          mass” means any plant matter targeted for re-  
15          moval from public land to promote ecosystem  
16          health.

17           (B) **INCLUSIONS.**—The term “excess bio-  
18          mass” includes—

19                   (i) trees or tree waste on public land;

20                   (ii) wood and wood wastes and resi-  
21                   dues; and

22                   (iii) weedy plants and grasses (includ-  
23                   ing aquatic, noxious, or invasive plants).

24          (4) **FEEDSTOCK.**—The term “feedstock” means  
25          excess biomass in the form of plant matter or mate-

1 rials that serves as the raw material for the produc-  
2 tion of biochar and bioenergy.

3 (5) INVASIVE PLANT SPECIES.—The term  
4 “invasive plant species” means a species—

5 (A) that is nonnative to a specified eco-  
6 system; and

7 (B) the introduction to an ecosystem of  
8 which causes, or may cause, harm to—

9 (i) the economy;

10 (ii) the environment;

11 (iii) water resources; or

12 (iv) human, animal, or plant health.

13 (6) SECRETARY CONCERNED.—The term “Sec-  
14 retary concerned” means the Secretary of the Inte-  
15 rior or the Secretary of Agriculture, as appropriate.

16 **SEC. 4. RESOURCE ASSESSMENT.**

17 (a) IN GENERAL.—The Director of the United States  
18 Geological Survey shall conduct resources assessments  
19 that collect and synthesize interagency and State data to  
20 quantify—

21 (1) invasive plant species and excess biomass in  
22 the form of dangerous fuel loads on public land that  
23 can be used for feedstock;

24 (2) estimated carbon content in that feedstock;

1           (3) estimated potential biochar and bioenergy  
2           producible from that feedstock; and

3           (4) potential water savings resulting from re-  
4           moval of invasive plant species and excess biomass  
5           on public land, by watershed.

6           (b) REPORT.—Not later than 1 year after the date  
7           of enactment of this Act and biennially thereafter, the Di-  
8           rector of United States Geological Survey shall submit to  
9           Congress a report that describes the results of each re-  
10          source assessment conducted under subsection (a).

11       **SEC. 5. TECHNOLOGY RESEARCH.**

12          (a) DEVELOPMENT OF MOBILE BIOCHAR PRODUC-  
13          TION UNITS.—Not later than 1 year after the date of en-  
14          actment of this Act and in accordance with subsection (c),  
15          the Secretary of the Interior shall establish a program to  
16          provide guarantees of loans by private institutions—

17               (1) to develop and optimize commercially and  
18               technologically viable biochar production units  
19               that—

20                       (A) are designed to use woody invasive  
21                       plant species and excess biomass feedstock such  
22                       as tamarisk, pinyon pine, and juniper;

23                       (B) produce net negative carbon emissions  
24                       relative to natural decomposition;

1 (C) are self-contained on a portable plat-  
2 form suitable for deployment to remote loca-  
3 tions and on unpaved roads; and

4 (D) can capture biochar and bioenergy  
5 produced for immediate energy needs or trans-  
6 port to market; and

7 (2) to produce, not later than 2 years after the  
8 date of securing a guaranteed loan under this sec-  
9 tion for the purposes described in section 7(a)(2), 4  
10 biochar production units for deployment to remote  
11 landscapes, of which—

12 (A) 2 shall be dedicated primarily to con-  
13 tract work with the Bureau of Land Manage-  
14 ment; and

15 (B) 2 shall be dedicated primarily to con-  
16 tract work with the National Park Service.

17 (b) DEVELOPMENT OF FIXED BIOCHAR PRODUCTION  
18 UNITS.—Not later than 1 year after the date of enactment  
19 of this Act and in accordance with subsection (c), the Sec-  
20 retary of Agriculture shall establish a program to provide  
21 guarantees of loans by private institutions—

22 (1) to develop and optimize commercially and  
23 technologically viable biochar production units  
24 that—

1 (A) while not necessarily self contained,  
2 can be disassembled, moved, and reassembled to  
3 be operational on a new site within 30 days, so  
4 as to support fuels reduction work;

5 (B) are designed to use excess biomass  
6 feedstock, such as trees killed by bark beetle in-  
7 festations;

8 (C) produce net negative carbon emissions  
9 relative to natural decomposition;

10 (D) can capture biochar and bioenergy  
11 produced for immediate energy needs or trans-  
12 port to market; and

13 (2) to produce, not later than 2 years after the  
14 date of securing a guaranteed loan under this sec-  
15 tion for the purposes described in section 7(a)(3), 2  
16 biochar production units for deployment to remote  
17 landscapes.

18 (c) GUARANTEED LOAN PROGRAM.—

19 (1) IN GENERAL.—The Secretary concerned  
20 may provide loan guarantees under this section to  
21 an applicant if the biochar production units pro-  
22 duced by the applicant will be dedicated primarily to  
23 contract restoration work with the Bureau of Land  
24 Management, National Park Service, or Forest Serv-  
25 ice, using—

1 (A) pinyon pine and juniper feedstock in  
2 the Great Basin;

3 (B) tamarisk feedstock in the Mojave  
4 Desert; or

5 (C) excess biomass feedstock, such as trees  
6 killed by bark beetle infestations in the Inter-  
7 mountain West.

8 (2) CRITERIA.—In selecting recipients of loan  
9 guarantees from among applicants, the Secretary  
10 concerned shall give preference to proposals that, as  
11 determined by the Secretary concerned—

12 (A) meet all applicable Federal and State  
13 permitting requirements;

14 (B) are most likely to be successful; and

15 (C) are located in local markets that have  
16 the greatest need for the biochar production  
17 units due to—

18 (i) identified high-priority landscape  
19 restoration needs;

20 (ii) availability of sufficient quantities  
21 of feedstocks described in subsection (b);

22 or

23 (iii) a high level of demand for  
24 biochar or other commercial byproducts of  
25 the biochar production units.

1           (3) MATURITY.—A loan guaranteed under this  
2 section shall have a maturity of not more than 20  
3 years.

4           (4) TERMS AND CONDITIONS.—The loan agree-  
5 ment for a loan guaranteed under this section shall  
6 provide that no provision of the loan agreement may  
7 be amended or waived without the consent of the  
8 Secretary.

9           (5) GUARANTEE FEE.—The recipient of a loan  
10 guarantee under this section shall pay to the Sec-  
11 retary concerned a guarantee fee in an amount de-  
12 termined by the Secretary concerned to be sufficient  
13 to cover the administrative costs of the Secretary  
14 concerned relating to the loan guarantee.

15           (6) FULL FAITH AND CREDIT.—

16           (A) IN GENERAL.—The full faith and cred-  
17 it of the United States is pledged to the pay-  
18 ment of all guarantees made by the Secretary  
19 concerned under this section.

20           (B) EVIDENCE.—Any guarantee made by  
21 the Secretary concerned under this section shall  
22 be conclusive evidence of the eligibility of the  
23 loan for the guarantee with respect to principal  
24 and interest.

1           (C) VALIDITY.—The validity of any guar-  
2           antee made by the Secretary concerned under  
3           this section shall be incontestable in the hands  
4           of a holder of the guaranteed loan.

5           (7) ANNUAL REPORTS.—Until the date on  
6           which each guaranteed loan under this section has  
7           been repaid in full, each year the Secretary con-  
8           cerned shall submit to Congress a report on the ac-  
9           tivities of the Secretary concerned under this section  
10          during the preceding year.

11 **SEC. 6. EXISTING TECHNOLOGY.**

12          (a) IN GENERAL.—The Secretary of the Interior and  
13          the Secretary of Agriculture shall each establish a pro-  
14          gram to provide guarantees of loans by private institutions  
15          for the construction or acquisition of facilities for the pro-  
16          duction of biochar.

17          (b) REQUIREMENT.—The Secretary concerned may  
18          provide a loan guarantee under this section to an applicant  
19          if facilities constructed or acquired by the applicant will  
20          be dedicated primarily to contract restoration work with  
21          the Bureau of Land Management, National Park Service,  
22          or Forest Service, using—

23                  (1) pinyon pine and juniper feedstock in the  
24                  Great Basin;

25                  (2) tamarisk feedstock in the Mojave Desert; or

1           (3) excess biomass feedstock, such as trees  
2           killed by bark beetle infestations in the Inter-  
3           mountain West.

4           (c) CRITERIA.—In selecting recipients of loan guar-  
5           antees from among applicants, the Secretary concerned  
6           shall give preference to proposals that, as determined by  
7           the Secretary concerned—

8                   (1) meet all applicable Federal and State per-  
9                   mitting requirements;

10                   (2) are most likely to be successful; and

11                   (3) are located in local markets that have the  
12           greatest need for the facility due to—

13                           (A) identified high-priority landscape res-  
14                           toration needs;

15                           (B) availability of sufficient quantities of  
16                           feedstocks described in subsection (b); or

17                           (C) a high level of demand for biochar or  
18                           other commercial byproducts of the facility.

19           (d) MATURITY.—A loan guaranteed under this sec-  
20           tion shall have a maturity of not more than 20 years.

21           (e) TERMS AND CONDITIONS.—The loan agreement  
22           for a loan guaranteed under this section shall provide that  
23           no provision of the loan agreement may be amended or  
24           waived without the consent of the Secretary concerned.

1 (f) GUARANTEE FEE.—The recipient of a loan guar-  
2 antee under this section shall pay the Secretary concerned  
3 a guarantee fee in an amount determined by the Secretary  
4 concerned to be sufficient to cover the administrative costs  
5 of the Secretary concerned relating to the loan guarantee.

6 (g) FULL FAITH AND CREDIT.—

7 (1) IN GENERAL.—The full faith and credit of  
8 the United States is pledged to the payment of all  
9 guarantees made by the Secretary concerned under  
10 this section.

11 (2) EVIDENCE.—Any guarantee made by the  
12 Secretary concerned under this section shall be con-  
13 clusive evidence of the eligibility of the loan for the  
14 guarantee with respect to principal and interest.

15 (3) VALIDITY.—The validity of any guarantee  
16 made by the Secretary concerned under this section  
17 shall be incontestable in the hands of a holder of the  
18 guaranteed loan.

19 (h) ANNUAL REPORTS.—Until the date on which  
20 each guaranteed loan under this section has been repaid  
21 in full, each year the Secretary concerned shall submit to  
22 Congress a report on the activities of the Secretary con-  
23 cerned under this section during the preceding year.

24 **SEC. 7. DEPLOYMENT.**

25 (a) NEW TECHNOLOGY.—

1           (1) IN GENERAL.—Not later than 2 years after  
2 the date of enactment of this Act, the Secretary of  
3 the Interior and the Secretary of Agriculture shall  
4 initiate 3-year programs to employ the biochar pro-  
5 duction units provided under section 5 in pilot appli-  
6 cations in various climates and ecosystems of the  
7 United States.

8           (2) MOBILE UNITS.—In the case of biochar pro-  
9 duction units developed or optimized under section  
10 5(a)—

11                   (A) the Director of the National Park  
12 Service shall carry out initial programs using  
13 invasive tamarisk in the Mojave Desert as feed-  
14 stock; and

15                   (B) the Director of the Bureau of Land  
16 Management shall carry out initial programs  
17 using excess pinyon pine and juniper biomass in  
18 the Great Basin as feedstock.

19           (3) FIXED UNITS.—In the case of biochar pro-  
20 duction units developed or optimized under section  
21 5(b), the Chief of the Forest Service shall carry out  
22 the initial program using bark beetle-killed trees in  
23 the Intermountain West.

24           (b) EXISTING TECHNOLOGY.—

1           (1) IN GENERAL.—Not later than 180 days  
2 after enactment of this Act, the Secretary of the In-  
3 terior and the Secretary of Agriculture shall prepare  
4 plans for carrying out 3-year landscape restoration  
5 programs in various climates and ecosystems of the  
6 United States to employ facilities constructed or ac-  
7 quired under section 6.

8           (2) REQUIREMENTS.—In carrying out the land-  
9 scape restoration programs described in paragraph  
10 (1), the Secretary of the Interior and the Secretary  
11 of Agriculture shall carry out programs using  
12 invasive tamarisk in the Mojave Desert, excess  
13 pinyon pine and juniper biomass in the Great Basin,  
14 and bark beetle-killed trees in the Intermountain  
15 West.

16 **SEC. 8. APPLICATION AND MARKET RESEARCH.**

17           (a) ATTRIBUTES.—Not later than 1 year after the  
18 date of enactment of this Act, the Secretary of Agriculture  
19 shall provide competitive grants to conduct research and  
20 analysis that identifies—

21           (1) attributes and composition profiles of  
22 biochar produced from different feedstocks for use  
23 as soil amendments; and

24           (2) attributes and composition profiles of bio-  
25 energy produced from different feedstocks for use as

1 fuel for transportation, heating, or other uses identi-  
2 fied in subsection (b)(1).

3 (b) MARKET DEVELOPMENT.—Not later than 1 year  
4 after the date of enactment of this Act, the Secretary of  
5 Agriculture, acting through the Director of the National  
6 Institute of Food and Agriculture, the Administrator of  
7 the Agricultural Research Service, and the Administrator  
8 of the Agricultural Marketing Service shall provide com-  
9 petitive grants to conduct research and analysis that—

10 (1) identifies potential uses and markets for  
11 biochar and bioenergy; and

12 (2) in the case of economic and life-cycle issues,  
13 analyzes—

14 (A) the full production costs versus the  
15 economic benefits of biochar production sys-  
16 tems;

17 (B) the impact of the production and use  
18 of biochar, including the performance of biochar  
19 in carbon sequestration programs; and

20 (C) the availability of feedstocks and the  
21 efficiency of using those feedstock for biochar  
22 production as compared to other biofuel-produc-  
23 tion systems.

24 (c) ENVIRONMENTAL REVIEW.—Not later than 1  
25 year after the date of enactment of this Act, the Secretary

1 of Agriculture shall provide competitive grants to conduct  
2 research and analysis relating to—

3 (1) the environmental benefits of biochar pro-  
4 duction and use, including—

5 (A) the water savings resulting from re-  
6 ducing populations of invasive or noxious plant  
7 species;

8 (B) the potential of biochar production  
9 systems—

10 (i) to reduce fertilizer use, nutrient  
11 leaching, and run-off; and

12 (ii) to reduce water pollution from  
13 feedlot runoff by capturing ammonia; and

14 (C) the reduction in greenhouse gas emis-  
15 sions resulting from the production and use of  
16 related bioenergy;

17 (2) the potential environmental impacts of  
18 biochar and bioenergy use, including—

19 (A) the potential toxicity and other adverse  
20 ecosystem effects resulting from biochar pro-  
21 duction or use of different biochars, as identi-  
22 fied under subsection (a)(1);

23 (B) the characterization of combustion  
24 products of bioenergy, as identified under sub-

1 section (a)(2), and the effects of those combus-  
2 tion products on air and water quality; and

3 (C) impacts on human health and safety.

4 (d) DEVELOPMENT OF BIOCHAR IN LANDSCAPE RES-  
5 TORATION.—Not later than 1 year after the date of enact-  
6 ment of this Act, the Secretary of Agriculture, acting  
7 through the Director of the National Institute of Food and  
8 Agriculture and the Administrator of the Agricultural Re-  
9 search Service, shall provide competitive grants to re-  
10 search and analyze—

11 (1) the potential uses of biochar in landscape  
12 restoration in different ecosystems and soil types;

13 (2) the relative benefits and potential adverse  
14 effects of use of different biochars, as identified  
15 under subsection (a)(1) in different western eco-  
16 systems and soil types; and

17 (3) the safety and efficacy of different methods  
18 of application.

19 **SEC. 9. AUTHORIZATION OF APPROPRIATIONS.**

20 There are authorized to be appropriated to carry out  
21 sections 4 through 8, including for the cost of grants and  
22 loan guarantees under those sections, such sums as are  
23 necessary for each of fiscal years 2010 through 2016.

○